RAILROAD GAZETTE

FRIDAY, FEBRUARY 22, 1878.

The Baggage Car: Its Traffic, Occupants and Surroundings.

BY PAUL STORKE.

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IV.

REGULATIONS FOR EXTRA BAGGAGE TRAFFIC.

The lack of adequate clerical facilities and the dispatch with which the business must be conducted require that the appliances for way-billing extra baggage and other baggage-car traffic should be as simple as possible; hence, in elaborating the following system every effort has been made to reduce the clerical work of the agent to the minimum, and at the same time make the blanks required as few and convenient to handle as possible.

It is, perhaps, proper to state here that in perfecting the system described in this and preceding chapters there has been no straining after something new or original. After giving the subject of baggage traffic accounts much thought, in the vain attempt to make certain existing plans answer the purposes required, such plans were reluctantly abandoned and a new one formed based on the same general principles that are in use to-day all over the country in connection with the freight business. It was necessary to simplify and curtail the form and style of the freight blanks very much, adding several entirely new features; but the principal features, viz., the unpaid, prepaid and back charges, and the collection of charges by the receiving agent, remain the same. It seems evident that had the simplicity and comprehensiveness of the freight system been known to those in charge of the baggage traffic accounts, it would have been adopted by them long ago.

To relieve the forwarding agent (who is the official most pressed for time) as much as possible, all collections on account of baggage traffic should be made by the agent at the terminal station*, except in the following cases:

1st. When the baggage traffic is destined to a station where there is no agent.

2d. When it is checked through to points on foreign lines.

In these cases the charges should be prepaid, *i. e.*, they should be collected by the forwarding agent.

When the charges are prepaid they should be entered on the way-bill by the forwarding agent in the place provided for such charges.

When the charges are to be collected at the terminal station, the amount should be entered in the place provided for local charges.

In forwarding baggage traffic for which cash or its equivalent is to be collected, the ordinary form of baggage traffic way-bill "A"† should be used.

It would be more convenient for agents, perhaps, if distinctive colors were used in providing for the different forms of baggage traffic way-bills.

White pasteboard would answer very well for form "A." Way-bills might be printed on strong linen paper if thought advisable.

The face of each bill should be filled up by the forwarding agent.

When a bill reaches its destination it should be detached by the agent and the reverse side of it filled up in accordance with the facts. In the first place the baggage should be re-weighed by the receiving agent and the excess accurately ascertained. If the local charges are paid in cash, a place is provided for inserting the amount.

Back charges should in all cases be paid in cash.

If a mileage ticket is presented in settlement of the amount due for local charges, then the agent should detach the number of coupons required and insert the amount of same in dollars and cents in the place provided. If a trip permit, order or pass that can only be used once is presented, he should take up the same and enter its number and date, also the name of party by whom given. If a season permit is presented a description of the same should be inserted.

A careful record of each way-bill, by both the forwarding and receiving agent, should be entered on the proper station books.

From the record thus made on the station books, agents can keep their accounts in order and make the abstracts and accounts required at the end of the month.

The way-bills received by agents each day should be sent forward without delay to the Ticket Auditor.

The cash way-bills received each day (whether the cash has actually been collected at the time or not) should be arranged and inclosed in a separate package to the Ticket Auditor.

In those cases where way-bills are adjusted by receiving in payment mileage coupons or permits, as already described, or when settled partly in cash and partly in coupons or permits, then, and in that case, the agent should inclose each way-bill separately with the coupons or permit to the Ticket Auditor.

It is important that the coupons should reach the Ticket Auditor safely with the way-bill, as the said coupons are the voucher upon which he credits the receiving agent. The value of the coupons to the receiving agent is therefore that of cash. If a permit is lost a description of it might perhaps answer, but the loss of mileage coupons would be much more serious.

Bills adjusted with mileage coupons or baggage traffic permits should not be entered in dollars and cents on the books at the *terminal* station or in the monthly reports *for such station;* instead of this a description of what is received in lieu of cash should be entered.

As directed elsewhere, free business should not be included in the monthly abstracts. Free business is intended to mean baggage traffic way-billed upon Form "C," described further on. All way-bills of Form "A" must be included in the monthly abstracts.

It will frequently happen that Form "A" will be used in way-billing baggage when Form "C" should have been used; nevertheless Form "A" whenever used must be included in the monthly abstract.

As the way-bills and vouchers (coupons, permits, etc.) are sent forward by agents, in advance of the monthly abstracts, their possession by the Ticket Auditor will enable that officer to see that the agent is correct in his accounts of such payments, or *vice versa*.

Agents should be charged with way-bills in the month in which they are dated, without reference to the time of collection.

In case baggage traffic is for any reason re-shipped to another station without the agent having been able to collect the amount charged to him in account, then the agent should detach the original bill, as in other cases, and make a new one, *i. e.*, re-bill the baggage. The new bill should read from the place of reshipment to destination. In re-billing baggage traffic the amount of the original charges, both local‡ and back, upon the baggage should be inserted in the new way-bill as *back charges*.

At the close of the month the agent that re-billed the baggage should charge himself with the original or first way-bill described above. As a set-off against this charge he should take credit in his monthly balance sheet for the amount of the back charges. The agent who finally collected the back charges should of course charge himself with such charges the same as he would with the amount of any local charges he might collect. Under ordinary circumstances all unpaid charges should be settled at the point to which it was originally billed. But as cases will arise where this is exceedingly inconvenient or practically impossible, it becomes necessary to arrange to carry such charges forward: the provision for *back charges* does this.

It also provides for any cash advances a company may, under peculiar circumstances, see fit to make to passengers on their baggage, etc.

As already explained, all particulars in reference to baggage traffic must be duly spread upon the cash book and other station books at the time by agents.

Agents should take credit in their monthly balance, under the head of "*Uncollected Baggage Traffic Charges*," for the aggregate amount of any and all baggage traffic way-bills charged to them in account, but for which they have not for any reason been able to collect.

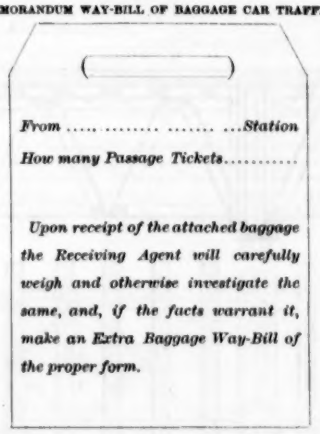
In addition to this, the agent should be required to forward a detailed and separate statement of the uncollected charges, giving the particulars of the same. This statement should give the original date of the way-bill, date of its receipt, number, point from, point to, correct weight, local charges and back charges. This statement may properly be called "*List of Uncollected Charges on Baggage-Car Traffic.*"

WHEN THERE IS LACK OF TIME AT FORWARDING STATION.

It will frequently occur, as already intimated, that the forwarding agent does not have the requisite time to investigate the facts in reference to supposed extra baggage presented to be checked as ordinary baggage; or he is unable, perhaps for want of time, to regularly way-bill the baggage traffic forwarded by him and known to be such. In these and all similar cases he should attach a memorandum bill, Form "B,"§ to the baggage.

§ "*B.*"

MEMORANDUM WAY-BILL OF BAGGAGE CAR TRAFFIC.


From ....Station
How many Passage Tickets.....
Upon receipt of the attached baggage the Receiving Agent will carefully weigh and otherwise investigate the same, and, if the facts warrant it, make an Extra Baggage Way-Bill of the proper form.

The receiving agent upon receipt of such baggage should carefully investigate all the facts in the case, and in the event it is found that the amount is in excess of the quantity entitled to be passed free, then such agent should make a way-bill of the usual form "A" or "C," as the case requires.

The insertion by the forwarding agent of the number of passage tickets held by the owner will enable the receiving agent to tell just how much baggage is entitled to pass free under the rules, the excess, if any, being chargeable as extra baggage.

The insertion of the number of the station from which forwarded is not important, but it will be useful to the receiving agent in locating definitely the point of shipment if the manifest of the train baggageman or the check attached should not furnish the information.

To fill up and attach this memorandum bill will require but an instant, and it can consequently be done in all cases of doubt, or when the forwarding agent is hurried.

In this way the case is not lost sight of, and thus no particle of the revenue of a company from this source is unnecessarily lost.

Instances will arise where extra baggage presented for shipment will not be discovered or suspected by the forwarding agent, and will, in consequence, be sent forward without any intimation or warning to the agent at the terminal station. If such agent, however, is a shrewd, observing official, or is located at an interior point, he will very likely discover the omission. In such a case he should make a way-bill, using the regular form. As already indicated, the baggage check attached or the information contained in the train baggageman's manifest ought to be such as to enable the agent to locate the point of shipment in such cases.

Whenever for any reason it is necessary for the receiving agent to make a way-bill, he should, so far as possible, fill up both sides of the blank. The number as entered on the bill should in such cases be preceded by the letters "R. A.," as "R. A. 41." In numbering bills of this description, the receiving agent should commence with No. 1 on the first of each month. A duplicate of each bill of this character should be made by the receiving agent and forthwith transmitted to the forwarding agent. The word "Duplicate" should be written in ink across both sides of the duplicate. Whenever the letters "R. A." precede the number upon a bill, it will inform the Ticket Auditor and all others interested that the bill in question was made by the receiving agent.

When for any reason baggage traffic is stopped in transit for delivery to the owner at an intermediate station, or when the train baggageman, under the direction of the owner, carries it beyond the point to which it is billed, then the agent at the station where it is unloaded should insert in the way-bill the right destination and should correct the local charges, making them more or less as the tariff prescribes, sending a notice of the correction, without delay, to the forwarding agent, so that he may alter his books.

BAGGAGE TRAFFIC TO AND FROM FOREIGN ROADS.

In billing baggage traffic through to points on foreign lines, Form "A" should be used as in other cases. The charges, however, as already explained, should, for obvious reasons, be prepaid, though a better check would be secured on the collecting agent by billing it unpaid. In the event the agent is unable regularly to bill the baggage, as already explained in connection with local baggage, as described under head of Form "B," then he should pursue exactly the same course as directed in that case.

If baggage traffic is received from points on foreign lines

†"A."

FACE OF BAGGAGE-CAR TRAFFIC WAY-BILL.

Blank Road. No.....

( )

No. Parcels.....

From.....To.....

How many passage tickets.....

.....187....

No. Pounds..... .....Rate.....

Charges to be collected at terminus, viz.:

Local Charges, $.....

Back Charges, $.....$.....

Prepaid charges collected by Forwarding Agent, $.....

"A"

BACK OF BAGGAGE-CAR TRAFFIC WAY-BILL "A."

( )

Detached at..... .Station.

Date..... .....187....

Correct Weight.....

PAID *in Cash, viz.:*

Local Charges, $.....

Back Charges, $.....$..... .....

PAID *with Coupons, viz.:*

Local Charges, $.....

PAID *by Permit No*.....

dated.....

Signed by.....

.....

NOTE.—This way-bill should be attached to the baggage or parcels by the usual check strap or in any other way that the nature of the traffic may demand. Upon all *parcels* a small red label bearing the words "Baggage Car Traffic" might be *pasted* so that in the event the way-bill became detached the label would still warn the receiving agent. In reference to extra baggage proper, the distinctive form of excess baggage check given the passenger serves to warn the receiving agent.

* The idea of making the receiving agent instead of the forwarding agent collect the charges on baggage-car traffic originated with Dr. W. H. Stennett, a gentleman prominently connected with the passenger business of the Northwest for many years. This idea (it may almost be called an inspiration) makes it possible to secure a complete check upon the baggage-car traffic. The business has always lacked this check heretofore and many irregularities have occurred in consequence.

‡ The word local charges is intended to mean the unpaid (through charges, whether the business is local or foreign.

without way-bill or other indication of its coming under that head, the receiving agent should make a through way-bill, form "A," as directed elsewhere in similar cases for local baggage. The reversible checks giving the name of the station from which checked will enable the agent to fix the amount of charges due on any baggage traffic he may receive from foreign lines.

The proportion belonging to the respective companies for baggage traffic billed through from one line to or over another should be fixed the same as foreign passenger business, viz.: upon such basis as the officers of the lines interested may mutually agree upon. The reports of proportions due foreign companies on account of collections for baggage traffic passing over their lines can be made supplemental to the monthly coupon (passenger) report, or a separate report

warding company he (the receiving agent) should insert opposite the words "local charges." These words he will alter to read "*prepaid charges.*" The amount of the *undercharge* to be collected by him he should insert in the place provided for "back charges." He should, however, run his pen through the words *back charges*, inserting "*Undercharge*" in their place. This undercharge should be reported by the collecting company to the other companies interested, the same exactly as if it was for extra baggage forwarded instead of received.

In the event the agent at the receiving station discovers that the forwarding company (*i. e.*, the foreign agent) has *charged too much*, then he (the receiving agent) will make a note of the fact and report it to the Ticket Auditor, but will not alter the way-bill.

A way-bill should be transmitted to the Ticket Auditor for every pound of extra baggage transmitted, whether free or otherwise.

ACCOUNTING FOR TRAFFIC PASSED WITHOUT CASH PAYMENTS.

It remains to provide for those cases where the agent is unable to transmit to the Ticket Auditor direct and palpable reasons why he does not collect cash or remit its equivalent to the Ticket Auditor for the baggage traffic which he permits to pass. He will be unable to do this when passengers hold season baggage permits or passes, or permits good for a stipulated period, or when the permit or frank is written on the back of a passage ticket or pass, or when the agent is authorized in his discretion to pass baggage traffic free.

It is manifestly impossible, in cases of the kind recited, that

GILBERT ELEVATED RAILWAY ON WEST BROADWAY, NEW YORK.

Constructed by Clarke, Reeves & Co.

Fig. 12.

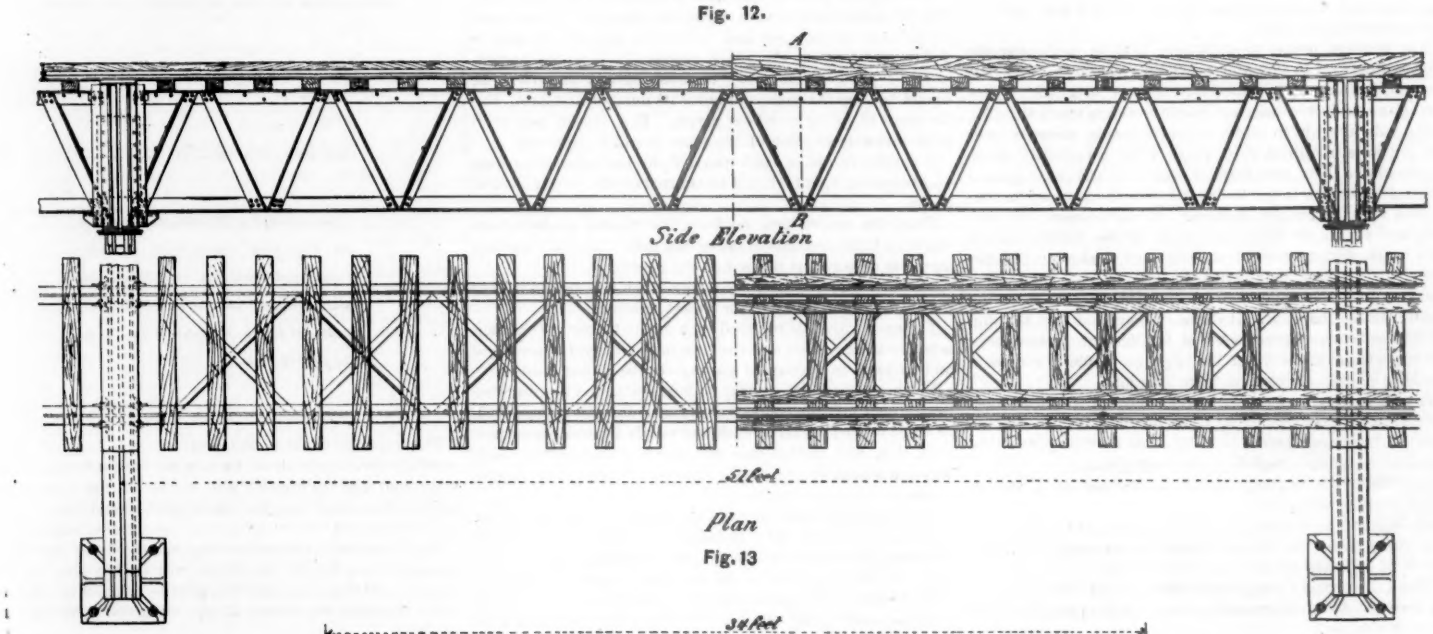


Fig. 13

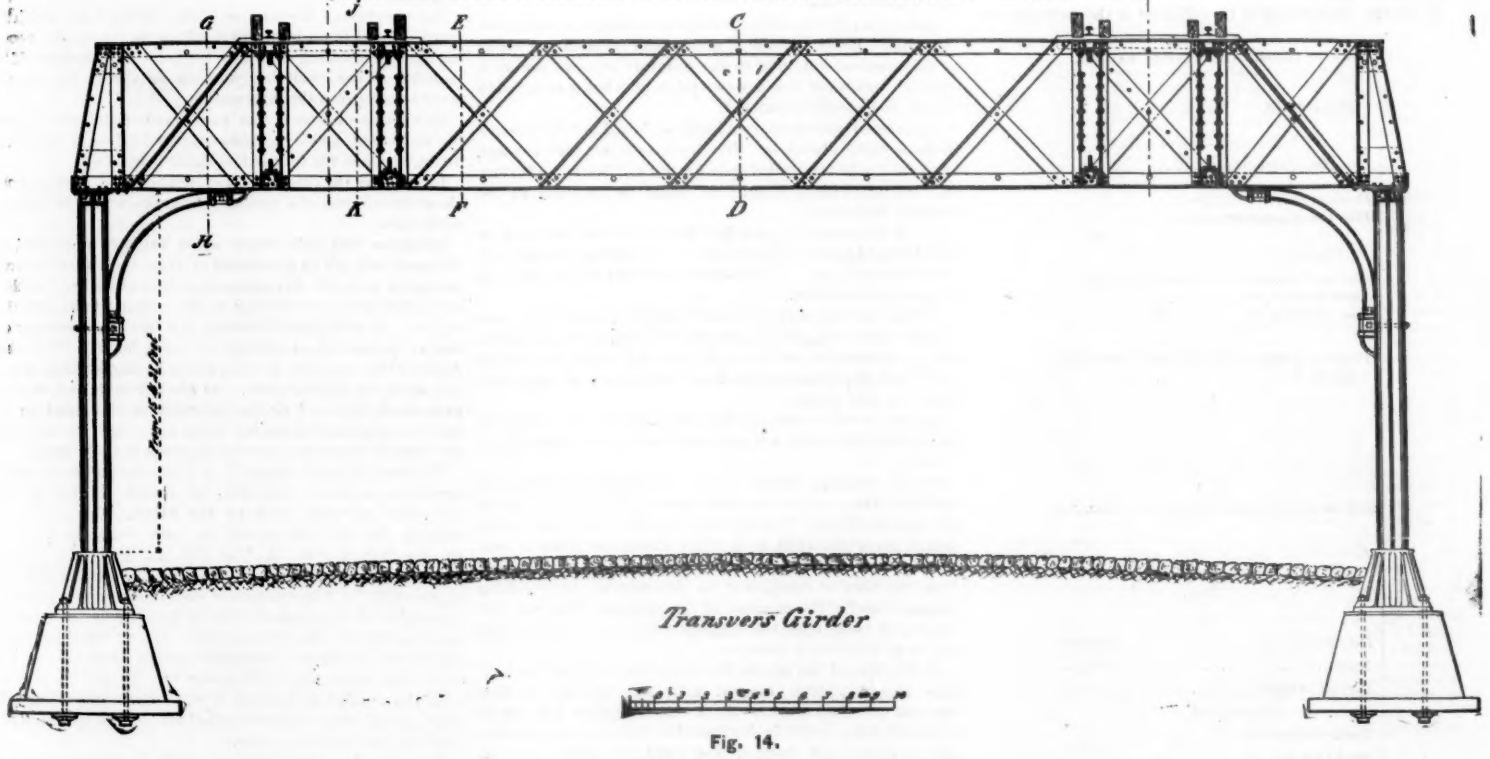


Fig. 14.

can be made, as seems most desirable. The report should, however, give all the information shown by the way-bill, so that each company interested may properly locate each item of baggage it transports.

In connection with the inter-road business, the train baggageman on lines intermediate between the point of shipment and final destination should be required by their respective companies to send to their Ticket Auditor an accurate transcript of each and every through way-bill. This information is necessary to enable the intermediate company to see that it receives its just proportion of all the through baggage traffic transported by it.

In the event the agent at the terminal point for inter-road business discovers that the amount collected at the point of shipment is not enough, he should fill up and enter the correct amount on the reverse side of the inter-road way-bill. Several changes will, however, be required in the phraseology of the bill to meet the requirements of cases of this kind. The amount collected by the for-

Except when agents discover that baggage traffic received from foreign lines is *undercharged*, as already described, they will not alter or fill up the reverse side of way-bills received from such foreign lines.

When way-bills, foreign or local, are billed prepaid and are correctly billed, no amount will, of course, be inserted on the reverse side of the way-bill by the receiving agent. If the bill is corrected the amount collected by the receiving agent will be inserted opposite *local charges.*

In the event that the receiving agent discovers that local prepaid baggage traffic has not been charged enough, then the amount of the undercharge will be inserted on the reverse side of the way-bill and duly collected. In the event the amount prepaid for local traffic is too great, then the receiving agent should notify the Ticket Auditor of the amount of the overcharge, but should make no correction upon the way-bill, except to note the amount of the overcharge across the margin of it. Any claims for overcharges of this kind should be made to the Ticket Auditor.

the order authorizing the transportation of the traffic should be transmitted to the Ticket Auditor with the way-bill. That officer is consequently compelled to rest satisfied with a statement or description of the order. This description he can compare or verify with the records of his office, which, as already explained, should be complete in every particular.

In the cases we have just referred to and in others of a similar character, agents should be provided with a special form of way-bill. (Form "C.") This form for convenience may be printed upon blue card board.

This form should be filled up and attached to the baggage by the forwarding agent, or in the event he does not have the time to fill it up, a blank way-bill of this form should be attached. This blank in such cases should be filled up by the receiving agent, but a copy need not be sent to the forwarding agent. The receiving agent is required, as in other cases, to detach way-bills of Form "C" upon receipt of baggage traffic and transmit the same to the Ticket Auditor. In the event baggage traffic of the character we have

just described reaches a station without any way-bill attached, then the receiving agent should make a bill and send it to the Ticket Auditor, but a copy need not be sent to the forwarding agent.

FORM "C."

SPECIAL BAGGAGE TRAFFIC WAY-BILL.

Extra Baggage amounting to.....
.....*lbs. passed from*.....
.....*to*.....
on account of.....
.....
.....
.....
.....
.....
.....
.....
.....
Dated.....187.....
No.....

Detailed reports should be made to the Ticket Auditor daily by the General Baggage Agent and others of all permits, orders or passes issued, also all mileage, season or commutation tickets disposed of; this information will be in constant requisition by the Ticket Auditor for the purpose of verifying the way-bills and accounts of agents transmitted to him.

Baggage traffic way-bills (Form "A.") must be numbered consecutively, commencing with number one on the first of each month. Baggage traffic special way-bills (Form "C.") need not be numbered.

Baggage should never be checked except upon the presentation of a passage ticket. When the baggage is checked the passage ticket should be punched with the usual station baggage punch. If this is done the ticket cannot be used twice for the same purpose.

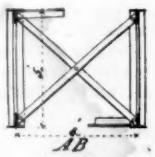


Fig. 15.

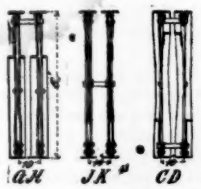


Fig. 16. Fig. 17. Fig. 18.

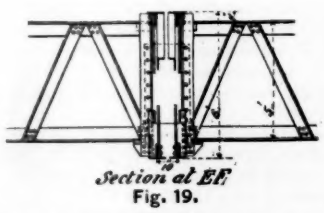


Fig. 19.

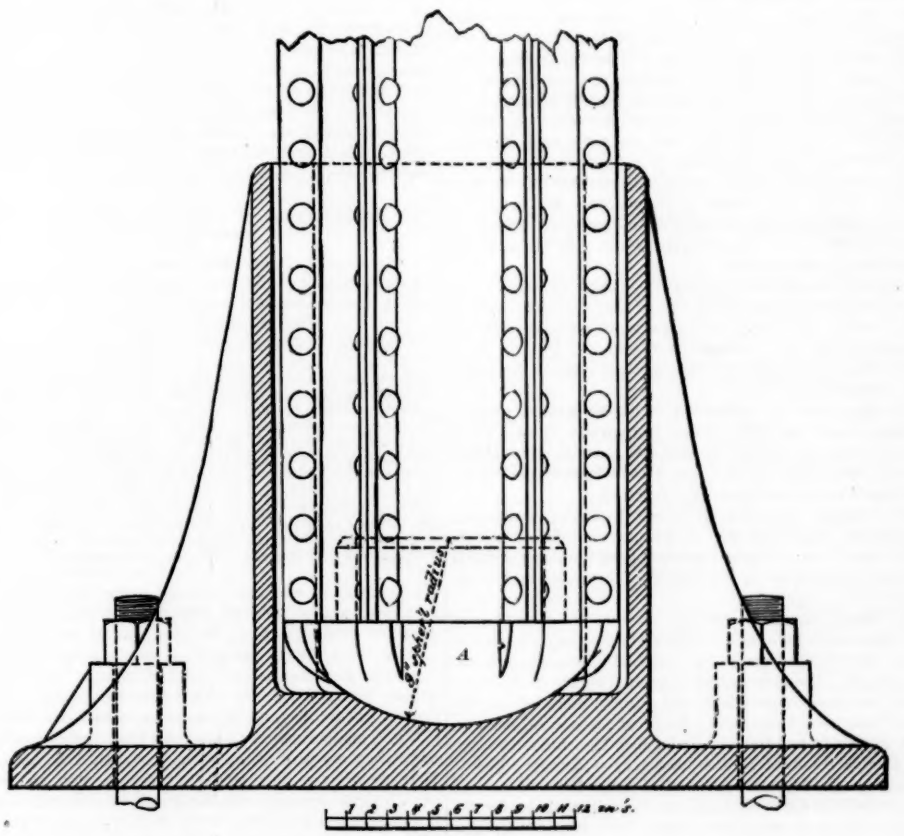


Fig. 20.

The Gilbert Elevated Railway.

II.

The engravings with this number represent the structure for the Gilbert Elevated Railway on West Broadway, which was built by Messrs. Clark, Reeves & Co., of Philadelphia. In this street, which is 50 feet wide between the curbs, the posts are placed on the sidewalk between the curbstone and the houses. They are 52 ft. 4 in. apart measured from centre to centre cross-wise of the street. On these posts transverse girders rest as shown in fig. 14. The longitudinal girders are placed be-tween the transverse girders near the posts and are separated so that the distance from centre to centre of the tracks is 34 feet. Each track rests on two longitudinal Warren girders. The transverse girders are single intersection lattice girders. These are all riveted structures, and therefore differ essentially from the Sixth avenue portion illustrated and described last week.

Fig. 12 is a side elevation of the longitudinal girders, fig. 13 a plan of one of the tracks, fig. 14 a transverse section showing the span across the street, figs. 15, 16, 17, 18 and 19 are transverse sections designated by the letters of reference. Fig. 20 is a section of one of the bed plate castings. A peculiarity of the latter is the "ball" casting, *A*, at the bottom in which the end of the column bears. The under side is made spherical and fits into a corresponding recess in the bed-plate. The top is flat. The object of this is to provide an adjustable bearing for the end of the column, so that it will rest uniformly over its whole surface. As the under side of the casting forms a universal joint, it can turn into any position required.

The following specifications will describe this structure more fully:

WEST BROADWAY SECTION.

From the vicinity of Grand street in South Fifth avenue to Warren street in College place.

I. *Columns.*—The columns shall be about 50 ft. between centres longitudinally, but the distance to be varied as circumstances may require. They shall be about 41 ft. apart between centres tranversely on South Fifth avenue, about 53 ft. in West Broadway, and about 35 ft. in College place. The columns shall extend to the lower chord of the transverse girder, and the distance from the surface of the street to the under side of the girder shall be not less than 14 ft., but more at such places as may be required by the gradients; the columns shall be of the Phœnix pattern, six segment columns of not less than 30 square inches area, with cast-iron radial feet, and wrought-iron caps, as shown in drawings. The columns shall be inserted in the bed pieces, and after being plumbed, shall be wedged and secured by a rust joint. The riveting of the columns for two feet from the base to be spaced at intervals of three inches, and from that up to be six-inch centres; the inside of the columns to be filled with the best American hydraulic cement, and sand mortar in the proportion of two parts of sand to one of cement.

LONGITUDINAL GIRDERS.

The four longitudinal girders required for each span shall be open riveted girders of the triangular pattern, generally five feet in depth, and of the proper lengths.

The top chords shall be made of two L irons, $6\frac{1}{2} \times 4 \times \frac{1}{2}$ in., and one vertical plate $6\frac{1}{2} \times \frac{1}{2}$ in.

The bottom chords shall be made of two irons, $6\frac{1}{2} \times 4 \times \frac{3}{8}$ in.

These chords shall be united by double angle iron braces $3 \times 4 \times \frac{3}{8}$ in. and $\frac{1}{2}$ in. in centre, and $3\frac{1}{2} \times 6 \times \frac{3}{8}$ in. and $\frac{1}{2}$ in. at ends, as shown in drawings, placed back to back outside of chords.

The ends of these girders shall rest in pockets made in the transverse girder. Both ends of alternate spans to be riveted in the usual way; the intermediate spans to be secured by screw bolts in oval holes to provide for expansion and contraction. All rivets $\frac{3}{4}$ in. in diameter.

TRANSVERSE GIRDERS.

The transverse girders will rest upon and be bolted to the wrought-iron column caps. They will be in pairs, each as follows:

Top chords, 2 irons, $6\frac{1}{2} \times 4 \times \frac{1}{2}$ in. Bottom chords, 2 L irons, $6\frac{1}{2} \times 4 \times \frac{1}{2}$ in. United by flat lattice bars running from one bar $6 \times \frac{1}{2}$ in centre to two bars $8 \times \frac{3}{8}$ at end panels, or angle iron as per approved drawing. The end panels shall be made of plates and angles as shown, in order to give increased stiffness, and for distributing load more uniformly.

To support each longitudinal girder end, two angles $6\frac{1}{2} \times 4 \times \frac{1}{2}$ in. shall be riveted to the face of each T girder, in the proper position, to receive the L girder. These angles shall carry a pocket above and one below for each chord of the L girder to rest upon.

All chord rivets shall be 1 in. and the rest $\frac{7}{8}$ in.

After the pair of girders are placed upon the column caps, they shall be united together by longitudinal diaphragm plates, 3 ft. 3 in long × 22 in. × $\frac{3}{8}$ in., secured to the angle irons by $\frac{7}{8}$ in. rivets, as shown in drawings, for the purpose of transmitting load equally to both girders.

LATERAL BRACINGS.

There shall be in each L girder six sets of vertical bracings, made of pairs of $3 \times \frac{1}{2}$ in. flat braces.

There shall be on the top chords a set of horizontal braces, eight pieces of L iron, $3 \times 3\frac{1}{2} \times \frac{5}{8}$ in., and a similar set on the bottom chords, running in the opposite direction, all secured to chords by $\frac{3}{4}$ in. rivets.

GENERAL CONDITIONS.

In case of any considerable variation from the lengths of spans upon which the drawings are based, viz.: 51 ft. per L girder and 52 ft. 10 in. per T girder, the dimensions of the chord shall be varied approximately, but not beyond what can be done by using the same rolls, and will be further strengthened when necessary by additional plates. Angle iron will generally be full lengths of girders without splice.

The members and fastenings of these girders are intended to be so proportioned that no part shall, under the designated loads of

1,500 lbs. live,
350 lbs. dead,

equal to a total load of..... 1,850 lbs. per foot of each track, be subjected to greater strains than as follows:

L GIRDERS.

Top chords not more than..	4,000	lbs.	per	square	in. upon sections
Bottom " " " ..	5,000	"	"	"	"
Web " " " ..	3,000	"	"	"	"

LATERAL SYSTEM.

Braces not more than.....	8,000	"	"	"	"

T GIRDERS.

Top and bottom chords not more than.....	8,000	lbs.	per	square	in. upon sections
Web system, not more than	6,000	"	"	"	"
Shearing strain on rivets, not more than...	7,500	"	"	"	"
Bearing surface for rivets, not more than.....	10,000	lbs. for rivet diameter thickness of plate.			

The angles, plates and column segments shall be made of Phœnix best iron of an ultimate tensile strength of 50,000 lbs. per square inch. Rivets of best refined iron of 60,000 lbs. ultimate tensile strength. All rivet holes shall be truly spaced and punched and no drifting shall be allowed. All rivets shall well and truly fill their holes.

Contributions.

Artificial Ponds for Railway Uses.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The practice prevails to a limited extent, on some of the railways west of the Mississippi River, to provide a supply of water for train uses by creating artificial ponds. Usually this is accomplished by closing up culverts or other water passages through the railway embankment, where the topographical features of the ground favor a reservoir with large area and considerable depth. This mode of securing and holding a supply of water is only resorted to where there is difficulty in obtaining it in any of the ordinary methods—such as by streams, wells or springs, or where the mineral impurities of the water found render it undesirable for use in steam boilers.

The selection of a proper location for the pond is not unattended with difficulty. Good locations are not as abundant as at first thought might seem. Usually they are required on such portions of a railway line as traverse long stretches of upland or high ground. Little difficulty is experienced in obtaining water any where in the "bottoms" of such streams as the Mississippi, Missouri or Kansas rivers, whenever a point is reached by digging or boring which is on a level with the water in those streams—say from 15 to 30 feet. On the higher grounds it often happens that water, if found at all, can only be reached at great depth, and in limited quantities. I will cite one instance on a prominent railroad running out of St. Louis, where there have been numerous borings to a depth of from 400 to 1,200 feet, along some two hundred miles of its line, without more than finding a trace

of water. In this case resort is successfully had to artificial ponds.

Among the essentials to a serviceable pond, for railway uses, are:

First—Sufficient area and depth to hold a supply of clean, pure, soft water, gathered up during rainy periods, that will last over some of the long spells of drouth to which many of the Western States are periodically subject. With a favorable location, that secured a depth of 8 feet over a small part of the pond, I have known one of an acre and a half in extent afford a good supply for nearly all trains the entire year. This, of course, with a fair and well distributed rain-fall. Ordinarily the pond should have an area of from four to six acres, at least; and if larger, with a proportionate increase in depth, the supply would be beyond all contingency.

Second—It should have large depth, compared with its area, to make the loss by evaporation as small as possible. This is particularly applicable to those having an area less than four acres. The loss by evaporation during a dry summer will range from 3 to 5 feet off from its upper surface. This alone, saying nothing of loss in other ways, or by use, would be a large percentage of the contents, with a shallow basin.

Third—It should have a water-shed sufficient to insure a large replenishment, with moderate rains.

The drainage to the pond should flow entirely over grass lands, if possible—or where the area drained is very large, grass land should intervene between the pond and plowed or cultivated fields, to act as a strainer and prevent the washing in of surface soil. It should not be fed by a well-defined or direct stream, as this carries dirty water in freshets, not only contaminating that already in store, but depositing its sediment, gradually filling up the bottom, and lessening the capacity. The site should be selected at some point where the drainage of gently undulating ground covering a large area gradually converges at or near the point of crossing the railway. Such sites occasionally exist near the extreme heads of streams. I know of several never-failing, serviceable ponds, covering about six acres each, running from the edges to an extreme depth of ten feet. Also others, from *sixteen* to *twenty-two* acres, with an extreme depth of 18 feet. These are in reality miniature lakes, and in favorable winters furnish the company from 3,000 to 5,000 tons of excellent ice—besides supplying a town of 7,000 inhabitants in periods of water famine.

Failure of ponds may be ascribed to three causes:

1st. Insufficient capacity—either of area or depth, or both.

2d. Insufficient supply, in connection with the above, caused by long periods of absence of rain.

3d. Infiltration of the contents through a sandy or porous soil forming its bottom.

4th. Evaporation. However, with an annual rainfall ranging from 20 to 36 inches—a monthly from 1 to 10 inches during the spring and summer months, and isolated showers where the fall is from 2 to 4 inches—the loss by evaporation is almost constantly repaired.

5th. Leakage, which may be caused by defective or badly constructed embankments, of porous material, through which there is a constant percolation of numberless small trickling streams, or by the borings of craw-fish and musk-rats.

It is usually the case that the pond is determined upon after the road is built, and the bank to form the dam has not been substantially (because not especially) constructed for the purpose. The material of which it is made—sand, loam, gravel or clay—is promiscuously thrown together in the worst form possible to sustain the great pressure which is to come against it and prevent leakage. The difficulties are not always removed in the necessary widening which is made—though they can be remedied somewhat by a careful selection of the earth used, and its disposition in horizontal layers instead of one sloping mass. The slopes of all embankments which are to operate as a dam should have at least the proportions of 2 feet horizontal to 1 foot perpendicular on *each* side of the railway. The face on the water slope should be paved with a good substantial wall, or, if that be inexpedient or thought to be too expensive, it should be rip-rapped heavily. It has the double use of preventing wave-wash in times of high wind, and the boring of musk-rats. If well paved it will entirely prevent the operation of craw-fish.

Deleterious matter should be cut off—such as drainage from barn and stock yards, from hog-lots, and from street sewers if near towns; particular care should be taken, in this respect, to prevent the inlet of water from locomotive or shop yards, as carrying with it more or less of oily matter. I know of a very fine pond almost ruined by this latter cause. Cattle should be fenced out, and not permitted to tread the borders of the pond in approaching it to drink. If the company does not own the land necessary to provide and control the drainage to the pond, it can usually arrange with owners for the purpose, either by lease or by contract, so that its construction and maintenance in good condition is mutually beneficial—furnishing one party good and clean water for its uses, and the other, water for stock, so arranged that its use for that purpose shall not be injurious to the pond or its contents, and ice for family use. Unless the pond is quite small—say one acre or less in extent, and shallow at best—the water never becomes offensive in smell. Though stagnant, it is pure, and clean, and far preferable for boiler uses to the well water of the high lands, which is always *hard*. The larger ponds are often stocked with fish, which feed upon and keep down an excessive growth of water-plants and animal impurities flowing into or bred in it.

The waste-weir carrying off the surplus water should not be built in the immediate embankment forming the dam, but should be constructed at some point as far distant from the heavy bank as possible—if constructed crossing the track near the mouth of a cutting, all the better. Leakage through the sides and joints of the weir, in such a case, would do the least amount of damage, and could be readily repaired.

It has already been mentioned that there are serious objections to the construction of a pond, with a well-defined brook, creek or stream of any kind as its direct supply. Most of our Western streams of that character rise rapidly in freshets to a great height—often ten to fifteen feet in a single storm. They carry large quantities of leaves and drift, run turbid and dirty, and remain so for weeks at a time. They bear the drainage from cultivated fields many square miles in extent—from farm-yards, and from outlying offal gathered on a hundred little tributaries, and this would mainly be dropped in the pool. The dam for such a stream would necessarily be constructed at a distance from the railway, or at least have no direct connection with the roadway. It would have to be so built as to pass all the surplus water in these great freshets over its crest and *not* through a waste-weir, and so strongly built as to be able to sustain the pressure of one of these sudden floods. The material for such a structure would be either stone or wood, or a combination of both, and liable to all the exigencies of washing out that all such structures are the world over. During long spells of rainy weather—and we have such periodically in the West—where the accumulation is constant, no chance for perfect subsidence of any earthy matter in suspension could exist, the stream would be continually dirty and unfit for use.

From a long residence in the West, and careful observation for the purpose, I am convinced that artificial ponds of the nature I have advocated are especially adapted to the high grounds of Central Illinois, a portion of Southern Iowa, all of Northern Missouri, and Eastern Kansas and Nebraska. In Northern Texas I have seen them tried and the result a failure. The great plains of Western Kansas and Colorado, although well adapted topographically to their construction, seem to have no holding power in the soil, and water evaporates and leeches away rapidly. Many embankments in the railways of that region, over depressions and heads of water courses, are constructed without openings through them, but water never permanently accumulates. H.

The Requirement of Uniform Accounts and Returns by Law.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am in receipt of an anonymous circular of which the following is substantially a copy:

"LEGISLATIVE INTERFERENCE.

"That constitutional meddler, Charles Francis Adams, Jr., is seeking through the various railway Commissioners, secretaries of state, and legislatures to secure the passage of a law in each State giving to some petty officer or clique connected with each State the right to exercise a supervision over the accounts of railroads, to decide what accounts they shall keep and how they shall be kept. STATE SUPERVISION MEANS THE RIGHT OF PETTY DEMAGOGUES TO PRY INTO EACH COMPANY'S AFFAIRS, INSPECT ITS BOOKS, ITS VOUCHERS, EXPENSE BILLS AND PAY-ROLLS. Such a law once passed would never cease to harass the railroad companies. It is easy to prevent the passage of any such infamous law if the railroad companies will interest themselves in the matter through their representatives and friends at the various capitals.

"ANTI-SUPERVISION."

I do not know why this was sent to me, but suppose it was sent generally to railroad officials (of which I am not now one), and that it was without any special reference to my present views, which are quite generally known as being in favor of "Uniform Accounts and Returns of Railroad Companies," being Chairman of a Committee of the American Society of Civil Engineers, raised to further that object.

With your permission, I take this opportunity to present—not merely my personal opinions, in which I do not suppose your readers are interested,—but reasons why the securing of "Uniform Accounts and Returns by Railway Companies" is a desirable object, *first*, to the public; *second*, to the shareholders, and *third* to the railway officials or management, of which I suppose "Anti-Supervision" may be one.

And here permit me to record my opinion that to Charles F. Adams, Jr. (whom I know only by his reports and publications on railway matters) more than to any other man in this country, are the railway companies of the United States indebted for fair and considerate statements of the "Railway Problem," for consistent and logical denunciation of the "Granger" theories, and for an honest effort to point out wherein "regulation" does not necessarily imply "control." So far from being a "meddler," his recommendations have always deprecated meddling; but in demanding and insisting upon *honest reports of facts* he has been earnest, uncompromising and *right*.

But to my theme: "Uniform Accounts and Returns" are "*desirable to the public*" because railway companies are "public corporations," and if they can or ought to be called upon to make any "returns" whatever, these "returns" ought certainly be required to be correct, which they cannot be unless "accounts" are properly kept. And as there can be but one general basis upon which accounts can be correctly kept, the law should require this basis to be stated and enforced.

As is so clearly set forth in the memorial signed by the Commissioners of the New England States and the Engineer of New York—

"The accounts of these corporations are kept on no uniform system and under no public supervision, while the returns published by the different States neither resemble each other nor can they be relied on as correctly representing the condition of the several companies' affairs. Indeed, the returns now required in the several States differ so much that, in certain cases, corporations have to answer four different sets of questions from the same set of books.

"There is certainly no one material interest in this country an exact and correct knowledge of which is of such general importance as the business of railroad transportation and the affairs of corporations concerned in it. Under the loose system of making returns hitherto and now in use, it is impossible to obtain this knowledge; and we are fully convinced that it will continue to be so until the different States unite in requiring that all railroads make their returns at a given time and in a uniform manner."

As has been so distinctly pointed out by Mr. John M. Douglas, of London, one reason why in England and Germany there is such a wide-spread distrust of American railway securities is because we have no provision for any systematic keeping of accounts and publication of reports whose accuracy can be relied on.

Then again, as a guide to legislation (for as long as railroads continue to be of their present importance they will be subjects of legislation) returns are necessary, and "returns," to be of any value, must be based on accounts correctly kept.

Second. They are "*desirable to the shareholders*" because the shareholders are compelled to rely for a knowledge of the value of their stock upon the published reports and returns of the company, and if the reports are untrue and the returns incorrect, the opinions formed therefrom must of necessity be erroneous.

How many shareholders can now tell whether in making up the expense accounts of the company in which they are interested, the cost of steel rails is charged (1) in full to the "Construction" or "Betterment" accounts, (2) in full to the "Maintenance" account, (3) the difference between the cost of steel and the cost at the same time of an equal quantity of new iron rails to the "Betterment" account, and the balance to "Maintenance," or (4) the difference between the cost of steel rails put in the track and the value of the old iron taken out to "Maintenance?"

Yet all these four plans are followed, and they cannot all be correct, while upon the right one being used may depend the solution to the shareholder of the question whether his stock is valuable or worthless.

Third. They are "*desirable to the railway officials or management*" for several reasons, prominent among which are the following:

1st. Very few presidents, general managers and other chief executive officers of railroad companies are qualified by experience or training, to judge between conflicting opinions in regard to accounts, which are generally passed upon by the Auditor, Treasurer or other chief accounting officer. But I am justified by my experience and observation in expressing the opinion that not over 20 per cent. in number, and probably not over 40 per cent. in mileage, of the railroad companies of the United States have an accounting department worthy of the name, and in those that have not, correctness and accuracy in accounts are unheard-of requirements.

How many of the railroad companies, think you, enter on their books as liabilities their current expenses for services and materials *before they are paid?* I knew one railroad company, owning a prominent line, whose books made no mention of an issue of $500,000 of bonds because the revenue derived from the trains of a connecting road using their line was used to pay the interest on the bonds, *yet the revenue referred to was entered as earnings!*

I knew another railroad company owning 250 miles of line, whose books showed a floating debt of about $1,700,000, when investigation showed over $6,000,000; but the $4,300,000 excess *was not due, and therefore was not entered.*

Still another whose General Freight Agent had a theory that "one cent per ton per mile" was a paying rate on freight, and *he acted on it;* yet a correct statement of the company's accounts showed that the *average cost* of its freight traffic was *one and fifty-five hundredths* ($1\frac{55}{100}$) *cents per ton per mile!*

2d. The arrest of Hon. H. J. Jewett, Receiver Erie Railway Company, on a charge of perjury, for making false returns, points another moral in this connection.

Mr. Stephen Little, Auditor for Receiver of Erie Railway Company, an accomplished railroad accountant, having made up the Receiver's accounts on the basis accepted as correct by the best railroad accountant of this country, Mr. Jewett makes oath to them, and now come other "expert railroad accountants" impeaching the returns, and on their report is based the information against Mr. Jewett, which, issue as it may, cannot but injure Mr. Jewett in the opinion of many persons who will never hear of his acquittal; and possibly the technical question of his guilt or innocence may turn on the judicial construction given to certain questions in accounts which neither judge, counsel nor jury are likely to fully understand or appreciate. Were there a basis for accounting established by law, this difficulty could not arise.

3d. The question of legislation to which I have referred presents another important reason for correct accounts and full returns. I have long had reason to believe that much hostile legislation on railroad questions arises from imperfect knowledge (to call it by no harsher term), on the part of legislators, of the conditions of the railroad problem, and that much that has been taken by the railroad companies for spite and a desire to oppress them has arisen from an honest desire on the part of legislators to relieve their constituents from real or fancied wrongs, and without intention of doing the railroad companies any injustice.

It must be borne in mind in discussing this question that many railroad companies have systematically concealed the facts in regard to cost of operating, etc., so far as they could, *particularly from legislators.*

In support of my views upon this point, I make the following statement public for the first time:

In the winter of 1870-71, I was called to Columbus, Ohio, where the Ohio Legislature was then in session, to oppose the passage of a "pro-rata freight bill," which had passed the

House almost unanimously, and was then pending in the Senate.

It provided that all freight carried over railroads in Ohio should be transported at the *same rate per ton per mile* on each road as was charged on *through freight*, except that for distances up to 25, 50 and 75 miles, respectively, an additional rate might be charged of 75, 50 and 25 per cent. of the through rate per ton per mile, respectively.

This bill *was meant to be fair* to the railroad companies, and the members thought it was fair.

I went before the Railroad Committee of the Senate, no member of which I had ever known or seen, and made, without notes, a simple statement of facts, occupying less than half an hour. The committee listened attentively, as did also several Senators who gathered around, not members of the committee, and at the conclusion of my remarks several Senators *thanked me for enlightening them. The bill was defeated* when it came up, and a harmless substitute, prepared by our company's counsel and myself, was passed through both Houses, thus showing that the legislators only needed to know what was right to do it. Quod erat demonstrandum!

Apologizing for the length of this, and yet feeling that I have not done the subject justice, I am,

Very respectfully, WM. P. SHINN.

PITTSBURGH, Pa., Feb. 13, 1878.

Economy in Lubrication.

LOUISVILLE, CINCINNATI & LEXINGTON RAILWAY CO.
LOUISVILLE, Ky., Feb. 11, 1878.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Feb. 8, "Broad Gauge" points with pride to the cost of lubricating cars on his line, which averaged 0.0188 cent per car mile. The car milage in 1877 on this line was: Passenger cars, 1,338,530; freight cars, 4,587,868; total, 5,926,398; and there was used in their lubrication 3,925 gallons of oil, and 2,338 lbs. of waste, costing $1,069.02, and giving an average cost of 0.0180 cent per car mile. Our average for 1876 was .0192 cent per car mile.

WM. MAHL, Auditor.

Train Accidents in January.

The following accidents are included in our record for the month of January:

REAR COLLISIONS.

On the night of the 4th a freight train on the Wabash road broke in two near Sumner, Ind., and the rear section afterward ran into the forward one, wrecking several cars and blocking the road several hours.

On the 7th a freight train on the Wheeling, Pittsburgh & Baltimore road ran into a car which a way freight had left standing on the track near West Alexander, Pa., wrecking the car and damaging the engine.

On the night of the 7th a freight train on the New York Central & Hudson River road ran into some cars which had broken loose from a preceding freight near Gasport, N. Y. Several cars were wrecked and the track blocked seven hours.

On the morning of the 9th an engine in the Erie yard at Port Jervis, N. Y., became unmanageable through the breaking of the throttle valve and ran up the track and into the rear of a freight train, wrecking an oil car.

Early on the morning of the 10th a coal train on the Erie Railway ran into the rear of a stock train near Goshen, N. Y. Several stock cars were wrecked, a lot of sheep killed, and the engine of the coal train was thrown across the track, blocking one track for several hours.

On the afternoon of the 13th a freight train on the Pittsburgh, Cincinnati & St. Louis road ran into some cars which had broken loose from a preceding freight in a tunnel near Bloomfield, O. The caboose was wrecked and a brakeman killed.

Early on the morning of the 22d a freight train on the Pennsylvania Railroad ran into the rear of a Lehigh Valley coal train at Metuchen, N. J., wrecking a number of cars and blocking both tracks three hours.

On the morning of the 23d a passenger train on the Allegheny Valley road struck an engine which had backed upon a siding but had not cleared the main track far enough. The sides of two cars were torn out.

On the evening of the 23d a freight train on the Erie Railway ran into some cars which had broken loose from a preceding freight near Hancock, Pa., damaging the engine and wrecking several cars. The caboose caught fire and was burned up. The broken train sent back a flag promptly, but the other train was so close behind that there was not time to stop it.

On the 28th a freight train on the Pittsburgh, Fort Wayne & Chicago road ran into a preceding freight at Plymouth, Ind., wrecking the caboose.

On the 28th a Missouri Pacific passenger train ran into the rear of an Atchison & Nebraska passenger train at the depot in Atchison, Kan., damaging one car. It is said that the brakes failed to work.

Very early on the morning of the 29th a freight train on the Central Railroad of Georgia ran into a preceding freight, which had stopped near Bostwick, Ga., damaging the rear car. The engine man was hurt so that he died a few days afterward.

On the morning of the 29th a freight train on the Grand Trunk Railway ran into a preceding freight near Breslau, Ont., wrecking an engine and several cars. One trainman was killed and another hurt.

On the morning of the 30th a freight train on the Atlanta & Charlotte Air Line ran into the rear of a preceding freight near Toccoa, S. C., damaging the caboose.

BUTTING COLLISIONS.

On the night of the 23d there was a butting collision between two freight trains on the Atlantic & Great Western road near Venango, Pa. Both engines and several cars were damaged.

Late on the night of the 28th a local passenger train on the Pittsburgh, Cincinnati & St. Louis road ran into the head of a stock train at Point Bridge station in Pittsburgh, Pa. Several cars were damaged and some sheep killed.

DERAILMENT, BROKEN RAIL.

On the evening of the 9th a passenger train on the Central Railroad of Georgia struck a broken rail near Griswoldville, Ga., and three cars left the track and went down a high bank. The rail being broken, one end of it flew up, striking the bottom of the baggage car and lifting it from the track.

DERAILMENT, DEFECTS IN TRACK.

On the 27th the engine of a freight train on the Erie Railway ran off the track at Alden, N. Y., blocking the road two hours. The accident is said to have been caused by a defective frog.

DERAILMENTS, BROKEN AXLE.

On the morning of the 9th, near New Florence, Pa., on the Pennsylvania Railroad, an axle broke under a car in an express train, throwing one truck from the track and delaying the train a short time.

On the night of the 17th the engine of a freight train on the Erie Railway was thrown from the track near Callicoon, N. Y., by the breaking of the rear driving axle.

On the afternoon of the 31st the engine of a passenger train on the Amboy Division of the Pennsylvania Railroad was thrown from the track near Newtown, N. J., by the breaking of an axle, blocking the road some time.

DERAILMENTS, BROKEN TRUCK.

Late on the night of the 22d several cars of a freight train on the Lafayette, Muncie & Bloomington road were thrown from the track and wrecked near Lafayette, Ind. The accident is said to have been caused by the breaking down of a truck under an overloaded grain car.

On the morning of the 24th a sleeping car on an express train on the Savannah & Charleston road was thrown from the track near Savannah, Ga., by the giving way of one of the trucks. The train was delayed three hours.

DERAILMENTS, BROKEN BRIDGE.

On the evening of the 15th a passenger train drawn by two engines on the Connecticut Western road broke through a Howe truss bridge over Farmington River, near Tariffville, Conn. There were one baggage and nine passenger cars on the train, all crowded with persons returning from the Moody and Sankey revival meetings at Hartford. The first engine, which seems to have passed nearly off the bridge, was pulled back and fell upon the shore of the river; the second engine fell in the water, its position being nearly reversed from that it occupied on the track; the baggage car and the first two passenger cars fell in the river and were all badly wrecked, while the third passenger car stood almost on end, with the upper end leaving against the bridge-pier, the rest of the train remaining on the uninjured span of the bridge. There were 13 persons killed and 46 injured, some but slightly. The bridge, only one span of which gave way, was a Howe truss of two spans, 163 ft. each, and was built by A. D. Briggs & Co. in 1871. An investigation is now in progress, the evidence so far taken apparently indicating that the bridge was a very fair one at the first, but had received little care and no repairs since. Some of the persons interested believe that one of the locomotives left the track and knocked down some of the posts, breaking the truss.

On the evening of the 31st the engine of a passenger train on the Long Branch Division of the Central Railroad of New Jersey ran through the trestle bridge at Great Pond, N. J., which had been partly washed out during a severe storm. The engine turned over into the stream and a brakeman was caught under it and drowned, the engineman and fireman escaping by swimming. The train was running very slowly, the engineman fearing damage to the road from the storm.

DERAILMENTS, SPREADING OF RAILS.

On the afternoon of the 6th two cars of a passenger train on the Savannah & Charleston road ran off the track near Savannah River Station, Ga., doing some damage and blocking the road several hours. The spreading of the rails is said to have caused the accident.

On the evening of the 7th some cars of a freight train on the Central Branch, Union Pacific, were thrown from the track and wrecked near Monrovia, Kan., by the spreading of the rails.

About noon on the 10th the engine of a passenger train on the Kansas Central road ran off the track near Valley Falls, Kan., and went down a bank. One trainman was hurt. The accident was caused by the spreading of the rails.

On the afternoon of the 11th three cars of a passenger train on the Burlington, Cedar Rapids & Northern road were thrown from the track near Elmira, Ia., by the spreading of the rails, and five persons were slightly hurt. It is said that the spikes had been removed from a rail. One car rolled down a bank and was badly broken.

On the afternoon of the 15th the engine of a passenger train on the Laurens Railroad was thrown from the track near Martin's, S. C., by the spreading of the rails, doing some damage and injuring the engineman slightly.

On the evening of the 16th the engine and two cars of a freight train on the Western North Carolina road ran off the track near Old Fort, N. C. The accident was caused by the spreading of the rails.

On the 19th the engine of a passenger train on the Kansas Central road was thrown from the track by the spreading of the rails near Holton, Kan.

On the morning of the 22d a passenger train on the Nashville, Chattanooga & St. Louis road was thrown from the track by the spreading of the rails on a curve near Hunt's, Tenn. Two cars went down a bank and were damaged, injuring five passengers and two trainmen.

On the 30th an ice train on the Chicago & Northwestern road was thrown from the track by the spreading of the rails near Crystal Lake, Ill. Several cars were wrecked, two trainmen killed and one badly hurt.

DERAILMENT, WASH-OUT.

On the morning of the 31st a car of a passenger train on the Camden & Atlantic road was thrown from the track near Absecom, N. J., at a place where the road-bed had been washed by an unusually high tide.

DERAILMENTS, ACCIDENTAL OBSTRUCTION.

On the evening of the 12th a passenger train on the Atlanta & Charlotte Air Line struck a rock which had rolled upon the track on a curve near Jarratt's, S. C. The engine was thrown from the track, the pilot and truck being broken, and the train was delayed several hours.

On the 17th a mixed train on the Portland & Ogdensburg, Vermont Division, was thrown from the track on a trestle near Walcott Village, Vt., and seven freight cars and the passenger car went off the trestle, falling about 14 feet, and were piled up in a bad wreck. Four persons were hurt. The accident was caused by a stick of timber which fell from one of the cars.

On the 23rd a freight train on the Chicago, Milwaukee & St. Paul road struck a carriage at a street crossing in Milwaukee, Wis. The train was backing and the rear car overturned and crushed the carriage and was thrown from the track. There were four persons in the carriage, of whom two were killed and two were hurt.

On the night of the 31st a passenger train on the Nashville, Chattanooga & St. Louis road struck a rock which had fallen on the track near Johnsonville, Tenn., throwing the engine and one car from the track. The engineer and fireman were hurt.

DERAILMENT, OPEN DRAW.

Near midnight on the 18th the engine of a freight train on the St. Louis & Rock Island Division of the Chicago, Burlington & Quincy road ran through the open draw of the bridge over the Illinois River at Beardstown, Ill., falling into 30 feet of water. The coupling between the engine and tender broke and the rest of the train remained on the bridge. The engineman and fireman jumped and saved themselves.

DERAILMENT, RAIL REMOVED.

On the morning of the 16th the engine of a freight train on the Erie Railway ran off the track near Turner's, N. Y., at a point where a rail had been taken out for repairs by a party of trackmen.

DERAILMENT, MISPLACED SWITCH.

On the 31st a freight engine on the Boston & Albany road was thrown from the track by a misplaced switch in the yard at West Springfield, Mass., and slightly damaged.

DERAILMENTS WITH MALICIOUS INTENT.

Late on the night of the 13th the engine and three cars of a freight train on the Lake Shore & Michigan Southern road were thrown from the track by a misplaced switch in Baffalo, N. Y. The switch is said to have been purposely set wrong.

On the morning of the 20th the engine of a passenger train on the Dayton & Michigan road was thrown from the track by a rail which had been laid across the track, near Cranberry Creek, O.

On the evening of the 29th a freight train on the Nashville, Chattanooga & St. Louis road was thrown from the track near Lavergne, Ky., by a rail which had been placed across the track. Seven cars were wrecked and one of them, loaded with oil, caught fire and the wreck was entirely destroyed.

DERAILMENTS, UNEXPLAINED AND MISCELLANEOUS.

On the night of the 2d a freight train on the Chicago, Rock Island & Pacific road ran off the track near Fairfield, Ia., blocking the road several hours.

Early on the morning of the 3d several cars of a coal train on the Erie Railway ran off the track near Chester, N. Y., blocking one track for some time.

About noon on the 4th some cars of a coal train on the Erie Railway ran off the track at Sterling Junction, N. J., blocking the road an hour.

On the afternoon of the 4th some cars of a freight train on the Missouri Pacific road ran off the track in Atchison, Kan., blocking the track for a time.

On the night of the 4th the engine of a freight train on the Pittsburgh, Fort Wayne & Chicago road was thrown from the track in Fort Wayne, Ind., by snow packed down in a switch.

On the night of the 4th some cars of a freight train on the Atlanta & West Point road ran off the track near LaGrange, Ga., damaging the cars and killing two tramps who were stealing a ride.

On the 5th a freight train on the Missouri, Kansas & Texas road ran off the track near Caney Creek, Indian Ter., and 15 flat cars went off a trestle into the creek below, making a bad wreck.

On the night of the 5th the engine of a passenger train on the Troy & Boston road, jumped the track near Johnsonville, N. Y., but the train was stopped just on the edge of a high bank.

On the night of the 7th some cars of a freight train on the Pittsburgh, Fort Wayne & Chicago road, ran off the track near Hanna, Ind., blocking the road two hours.

Late on the evening of the 7th, as a freight train in the Pittsburgh yard of the Pennsylvania Railroad was backing into a siding, the engineman failed to stop in time, and several cars left the track, one of them running into a small house and knocking out one side of it.

On the morning of the 9th a passenger train on the Baltimore & Ohio road ran off the track at East Zanesville, O., damaging the engine, injuring the engineman badly and the fireman slightly.

On the 10th a passenger train on the Cincinnati & Terre Haute road ran off the track near Clay City, Ind., doing some damage and injuring three trainmen.

On the 10th a passenger train on the Nashville, Chattanooga & St. Louis road ran off the track near Waverley, Tenn.

On the afternoon of the 15th the rear car of a passenger train on the Lake Shore & Michigan Southern road jumped the track at Collinwood, O. The car was thrown over against an engine on a siding and damaged.

On the evening of the 15th five cars of a coal train on the New York Central & Hudson River road jumped the track on a curve close to the end of the bridge over the Seneca River at Seneca Falls, N. Y. The cars ran against the end post of the bridge truss, knocking it out and otherwise damaging the bridge so that trains could not pass over.

On the evening of the 19th the engine of an express train on the Philadelphia, Wilmington & Baltimore road jumped the track near Lamokin, Pa., delaying the train an hour.

On the morning of the 22d the engine and two cars of a passenger train on the Newark Branch of the Erie Railway ran off the track at Bergen Junction, N. J., blocking the road three hours.

On the evening of the 22d a local freight train on the Cleveland & Pittsburgh road ran off the track near Rainey's Coal Bank, O., blocking the road five hours.

On the evening of the 22d a local passenger train on the Indianapolis, Cincinnati & Lafayette road ran off the track in Cincinnati, O., blocking the road three hours.

On the 24th the engine of a construction train on the Western North Carolina road ran off the track at the bridge over the Catawba River, near Salisbury, N. C.

On the night of the 24th three cars of a freight train on the New York, Providence & Boston road were thrown from the track near Westerly, R. I. One of the cars upset and was badly broken.

On the afternoon of the 25th a car in a passenger train on the Illinois Central road ran off the track in Cairo, Ill.

On the 27th, as a freight train on the Erie Railway was backing on a siding at Alden, N. Y., the engine jumped the track, blocking the road three hours.

On the morning of the 28th a freight train on the Connecticut & Passumpsic Rivers road ran off the track on a high bridge near Barton, Vt. Nine cars left the track and ran nearly all the way across the bridge, breaking the ties and tearing up the covering of the bridge.

On the night of the 31st a coal train on the Philadelphia & Reading road struck a heavy snow drift in a cut near Exeter, Pa., and a number of cars were thrown over in such a way as to block both tracks four hours.

BOILER EXPLOSIONS.

On the evening of the 3d, as a passenger train on the Chicago, Burlington & Quincy road was near Council Bluffs, Ia., the arch or water-leg in the fire-box exploded, and the steam rushed out into the cab, scalding the fireman badly.

On the 23d the boiler of the engine of a passenger train on the Chesapeake & Ohio road exploded while standing at Charlottesville, Va. The engine was completely wrecked, pieces of it being thrown to a great distance. The track under the engine was driven down into the ground by the force of the explosion, the station platform torn up and much damage done to neighboring buildings. Strangely enough, no one was hurt.

OTHER ACCIDENTS.

On the 7th, as a freight train on the Oregon & California road was going up a grade near Barlow's, Oregon, one of the cylinder-heads was blown out, disabling the engine.

On the 22d a car loaded with cotton in a freight train on the Rome Railroad caught fire when the train was near Kingston, Ga., and the car was destroyed, with most of the cotton.

On the morning of the 30th, as a passenger train on the New York & Harlem road was near Patterson, N. Y., one of the side rods on the engine broke, and the loose end tore up one side of the cab, doing much damage and injuring the fireman badly.

This is a total of 75 accidents, whereby 23 persons were killed and 77 injured. Eight accidents caused the death of one or more persons, ten caused injury less than death, while 57, or 76 per cent. of the whole, resulted in no injury severe enough for record.

These accidents may be classed as to their nature and causes.

COLLISIONS:		
Rear collisions	14	
Butting collisions	2	
	—	16
DERAILMENTS:		
Unexplained	22	
Broken rail	1	
Defective frog	1	
Broken axle	3	
Broken truck	2	
Broken bridge	2	
Spreading of rails	9	
Wash-out	1	
Accidental obstruction	4	
Open draw	1	
Rail removed for repairs	1	
Misplaced switch	2	
Malicious obstruction	2	
Snow	3	
Running off end of siding	1	
	—	54
Boiler explosions		2
Cylinder head blown out		1
Car burned while running		1
Broken connecting rod		1
		—
Total		75

Four collisions were caused by trains breaking in two; one by carelessness in putting a train on a siding; one by failure of brakes, and one by a runaway engine. There were in all 28 accidents traceable directly to defect or failure of road or equipment. Of the collisions one was between two passenger trains, two between a passenger and a freight, and 13 between freight trains. There were 26 derailments of passenger and 28 of freight trains reported, while of the other accidents three were to passenger and two to freight trains.

The 16 collisions killed three persons and injured only one; the 54 derailments killed 20 and injured 74 persons, while the five other accidents injured two persons.

As compared with January, 1877, there was a decrease of 72 accidents, an increase of 13 in the number killed, and a decrease of 71 in that injured. The Tariffville accident accounts for exactly the increase in the number killed, while if that accident were excluded the number of injured would be little more than one-fifth of last year's.

The most notable accident of the month was the failure of the Tariffville bridge, both from its nature and from the fact that the number of casualties was greater, with one exception, than any we have recorded since the similar accident at Ashtabula, 13 months before, and the deaths at Tariffville were, perhaps, fewer than those at Ashtabula, only because fire was not added to the horrors of the wreck. As to the causes of the accident an investigation is still in progress, but it would probably not be going too far to say that the want of careful inspection and the neglect of needed repairs will fully account for the disaster. One other bridge failure is recorded, and that was caused by the washing out of a treacherous, sandy bottom under a pile bridge.

The month is notable for the small number of accidents, and part of this can be traced directly to the season. The weather was generally mild and wet with few very cold days and little snow. We find but one broken rail against 17 in January of last year, and but two derailments from snow instead of 24 a year ago, but there were nine accidents from spreading of rails. A notable feature, upon which, however, the weather probably had no influence, is the small number of collisions, only 21 per cent. of the whole, while the average of many months recorded does not vary greatly from one-third of the whole number of accidents. Of these collisions, too, a very much smaller proportion than usual were butting collisions. But two misplaced switches, an unusually small number, are recorded, and one of these is reported as purposely set wrong. For the first time in several months an accident is reported from the carelessness of trackmen in removing a rail for repairs without putting out the proper signals. One accident is reported from an open draw, a kind of accident which necessarily implies carelessness or neglect by somebody, either by the engineer in failing to see signals, by the bridge-watchman in failing to use them, or by the officers of the road in not providing proper and sufficient signals.

For the year ending with January the record is:

	No. of Accidents.	Killed.	Injured.
February	56	5	41
March	58	9	31
April	69	13	34
May	46	12	41
June	49	16	92
July	53	21	144
August	98	46	220
September	84	20	88
October	82	31	112
November	83	23	70
December	66	8	26
January	75	23	77
Totals	819	227	976

The averages per day for the month were 2.42 accidents, 0.74 killed, and 2.48 injured; for the year they were 2.24 accidents, 0.62 killed, and 2.67 injured. The average casualties per accident were for the month 0.307 killed and 1.027 injured; for the year 0.277 killed and 1.192 injured.

Railroad Bridge Accidents.

[From a paper read before the Boston Society of Civil Engineers, Feb. 6, 1878, by T. Appleton, C. E.]

Railroad bridge accidents are, and from the nature of things must always be, the most serious disasters that occur on railways. When a swift-moving train comes upon a bridge that gives way, it is hurled down into the gap by its own moving force and the force of gravity, and the resulting destruction must be fearful. When such a disaster is augmented by the terrors of fire and water, as is generally the case, it forms a picture of horror that cannot be calmly contemplated.

After the terrible catastrophe at Ashtabula, is was said, that there was a lesson which must be heeded by railroad officials. It was thought that such dearly bought experience would go far toward preventing similar occurrences in the future. Yet, notwithstanding the many sad lessons of bridge accidents, railroad bridges do continue to fall, and many lives are sacrificed every year by this means. In the year 1877 there were 24 such accidents in the United States, by means of which 13 persons lost their lives and 101 were injured. Now what are the lessons of such disasters? What are we to learn from past experience? In order to reach a satisfactory answer to these questions I have compiled a long list of bridge accidents which have happened in the United States and Canada during the past five years, and have collected numerous statistics concerning them. The basis of my investigations was the list of "train accidents" published monthly in the *Railroad Gazette*. This is the most complete, if not the only list of the kind published in this country. It is compiled with great care, and it is seldom that an accident of any serious nature escapes the watchful eye of the editor. Upon studying these lists, whenever I found a bridge accident imperfectly described, I have sent a circular letter to some official of the railroad on which it was said to have occurred, asking for further information in regard to the case. Upward of 70 letters have been thus sent to the officials of as many different corporations. I have been gratified by the receipt of answers to some 55 of them. I am thus enabled to present the following table of railroad bridge accidents that have occurred in the United States and Canada since December, 1872:

Here is a total of 183 accidents by means of which 197 persons lost their lives and 485 were injured. This does not necessarily include all the railroad bridge accidents that have occurred within those limits, but here are so many known cases.

Bridges whose tension members are all of iron and whose compression members are of wood I have called "Combination" bridges. Judging from the explanations received in other instances, a large majority of the 52 cases classed as "Cause Unknown" would, if the facts were ascertained, come under the fifth or sixth head. Where the description of the article merely says "the bridge gave way under a train" or "the train fell through the bridge," unless additional information could be obtained, I have placed it under the head of "cause unknown." "Square fall" includes only those cases were lack of strength was the only cause assigned for the falling of the bridge.

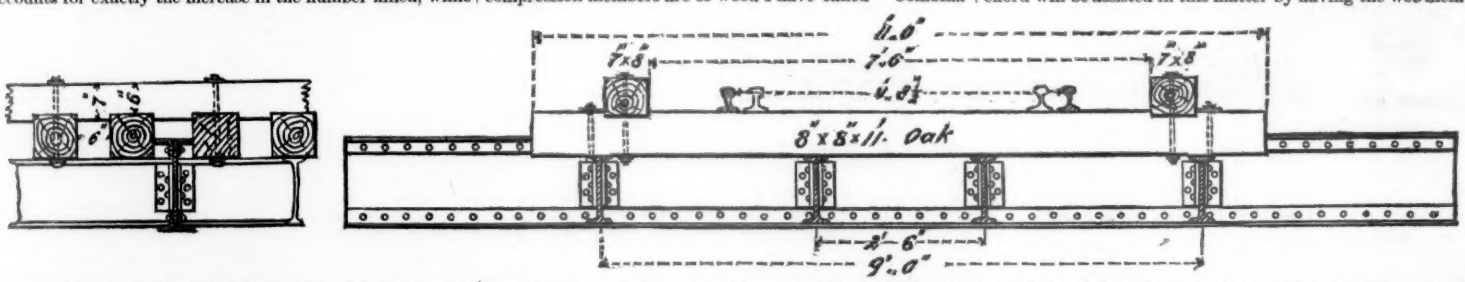
CAUSE OR NATURE OF ACCIDENT.	Mat'l or Style of Bridge.					Totals
	File or Trestle.	Howe Truss.	Combination.	Iron.	Unknown.	
1. Fire	2	1	..	..	3	6
2. Hurricane	..	2	..	1	..	3
3. Freshet	10	2	1	1	12	26
4. Undergoing repairs	..	1	..	1	5	7
5. Floor broken by train	1	10	1	..	15	27
6. Bridge knocked down by train	14	20	2	8	10	54
7. Square fall	4	1	..	3	..	8
8. Unknown	26	1	1	3	21	52
Totals	57	38	5	17	66	183

Upon studying this table we perceive that trestle and pile bridges are exceedingly dangerous structures, as more than one-half the number of accidents, where the material of the bridges were known, occurred on them. The table indicates also that wooden bridges are carefully watched as regards fire, and that train accidents seldom happen from that cause; this is no indication, however, that wooden bridges do not frequently catch fire. The small number of accidents on iron and combination bridges is liable to mislead. Considering that there are probably ten times as many wooden bridges as iron ones, in this country, and that many of the wooden bridges are quite old, while most of the iron ones are of recent construction, the number of accidents is quite as large as it should be.

In view of the large number of Howe truss bridges in this country, and the prevailing lack of system or "rule of thumb" by which they are usually built, the figures in the "Howe Truss" column seem astonishingly small. If the average Howe truss bridge, of which the Tariffville bridge was a fair sample, were subjected to a load of 3,000 lbs. per linear foot of track, which is the figure commonly used in calculating iron trusses, the iron would be strained from 20,000 to 30,000 lbs. per square inch and the wood from 1,000 to 1,500 lbs. per square inch, strains which are beyond the safe limit. I would not of course state that all Howe trusses are as weak as that, but the common practice of railroad bridge-builders would give such results. The writer once had occasion to compute the strains upon some Howe truss railroad bridges, and found that the iron was decidedly too weak. As the writer was young and inexperienced, while the builder was an old engineer and one of the pioneer Howe truss builders, he showed his calculations to the builder, asking him to criticise them if wrong. After examining the figures the builder replied: "Well, your calculations are all right; that amount of iron would be required for that load (one ton per foot); but we never use such heavy iron as that; it is not common practice." If Howe truss bridges were built as strong as modern iron ones are, there would be very few of them built, on account of their cost. Placed on the basis of equal strength, the cost of the iron bridge would not exceed that of the wooden one by more than ten per cent. And when the advantage of the iron structure as regards danger from fire is considered, to say nothing as to cost of renewals and repairs, ten per cent. excess in first cost is not to be thought of for a moment.

By far the most frequent causes of accident are derailed trains. An engine or car off the track runs off the ends of the sleepers, and falling upon the floor beams breaks them or throws them aside and falls through, or perhaps it strikes an end post or a main brace and knocks it out of place, in consequence of which the truss falls, pulling the other truss after it, and the whole bridge and train are wrecked.

What is the remedy? If it were possible to prevent trains leaving the track, the problem would be solved at once. But however perfect the track may be as to line, surface, gauge, etc., who can tell when an axle may break, a draw-bar pull out or a brake-beam fall on the track, or when any one of a hundred different things might occur which would throw a car from the rail, be the track never so perfect? If then we cannot prevent the cause let us mitigate the effect. Why should a bridge be built like a child's card house, that only needs a tap sidewise to bring it down flat? Why should we build a bridge by butting together a lot of separate pieces so that a blow from a piece of a broken driving-wheel, or a sleeper sticking out from a flat car, may knock one of its pieces clear out of the bridge and so leave the whole structure to fall? There is neither theoretical reason nor practical necessity for it. Look at the much ridiculed plank-lattice bridge! Who ever heard of one of them being *knocked down?* Old as they are, you can hardly take one of them apart when you wish to remove it. I do not advocate constructing bridges with as little regard to the theory of strains and strength of materials as the plank lattice shows. Far from it; let your chords, tension members, posts, etc., all be properly proportioned for the maximum strain that may come upon them, but *fasten them together*, let your structure be one integral bridge, not a conglomeration of disconnected parts resting upon each other and only kept in place by the force of gravity. In the riveted lattice bridge as built in this country, these principles are carefully carried out. All its parts are proportioned for the strain that comes upon them, but they are all so permanently fastened together that no one part can be dislodged from the whole. I would not be understood as objecting to the pin and link-joint *per se*, but what Bro. Herschel very aptly terms the "butted bridge." Use pins if you will, but make both top and bottom chords continuous and with sufficient stiffness so that if a car strikes the end post of your bridge it shall not be shut up like a jack-knife and drop the bridge off the abutment. The bottom chord will be assisted in this matter by having the web members fastened in such a way as to withstand both push and pull and having them fastened to each other at their intersections. You need not feel obliged to use the Warren girder or lattice systems if you have anything better, but attach the members to each other in such a way that if they should, by chance, be subjected to a strain for which they were not exactly intended, in designing the bridge, they would not be forced to part company with the rest of the bridge. Wherever two parts cross each other, rivet them together; they will thus hold each other up when the fearful derailed train comes crashing against them. No harm can come of this riveting of intersections if you have properly proportioned the several parts for their ordinary strains. If your tension member stretches or your compression member shortens you may get a cross strain by this connection; but bear in mind that if you have given the parts proper dimensions they will not appreciably change their length under strain.



Why the American pin and link bridge should be built in utter disregard of these essential principles, as it almost invariably is, and why the beautiful lattice girder system is so rarely used except in bridges having all their joints made with rivets, are unexplained riddles to me.

In view of the frequency of bridge accidents caused by derailed trains, it is evident that there is room for improvement in the common practice of pin and link bridge builders.

I do not undertake to set up an impenetrable body against an irresistible force. A swift-moving train is a powerful projectile. But it cannot be denied that a bridge can be built that will sustain shocks and blows much better than the theoretical "butted" bridge does. As examples of how riveted lattice bridges endure hard usage the following accidents on the New York Central Railroad are appropriate:

In July or August, 1874, as a freight train was approaching the Oriskany Creek bridge on the New York Central Railroad, a car in the middle of the train left the track and was drawn along over the ties until close to the bridge, when the coupling broke and it was pushed broadside against the end posts of the centre and north trusses by the momentum of the rear part of the train. [The bridge was a three-truss through riveted lattice of 80 ft. span. The centre truss was 20 ft. high, and the side trusses 15 ft.] The effect was that the end post of the centre truss was slightly bent, but not so badly but that it was used without repairs until October, 1877. The end post and braces of two panels of the north truss were broken off from the chord and made into scrap iron. The north chord settled at the second floor beam about two feet, being prevented from going further by the support derived from the other trusses through the floor beams and top laterals. The south track was not injured so as to stop the movement of trains. As soon as the wrecked cars could be removed wooden bents were placed under the north ends of the floor beams of the north track, and trains were crossing upon it within twelve hours after the accident.

On the Auburn branch of the New York Central Railroad there is a bridge over Seneca River and Canal between Cayuga and Seneca Falls. The west span is a through bridge, 111 feet long, and there are two deck spans, each 57 feet long. All these spans are single-track riveted lattice. On the 14th of January, 1878, a train of about 60 coal dumps was going east, and when about 200 feet from the bridge, the tenth car from the rear jumped the track and was drawn along over the ties and struck the north end post. The for-

ward part of the train broke loose and went on; four cars in the rear of the derailed car, together with it, were piled up promiscuously on the west end of the bridge. The condition of the bridge when the wrecked cars were removed was as follows: The end post of the north truss was torn entirely loose from the chord, and was nearly broken in two in the middle; the main brace of the fourth system was badly bent, but was not wholly loosened from the chords; the braces of the second and third panels of the north truss were broken and twisted. The north lower chord was bent at the third panel and settled eighteen inches; the end part of the south truss was not injured, but the braces at the third, fourth and fifth panels were badly bent and some of them torn loose from the chord. The south truss was inclined about 18 inches to the north by the settlement of the other truss. The entire bridge was moved endwise about one inch. Its weight was about 39 tons. Pile bents were erected at the third and fourth panels, and the north chord and floor were brought to a level, and trains crossed at 6 a. m. on the 16th inst., 36 hours after the accident.

It will be seen by the table that the Howe Truss is frequently knocked down. This would seem to be a natural consequence of the manner of its construction, as there is nothing to prevent the dislodgement of its compression braces. The same can be said of "combination bridges," *i. e.*, those whose tension members are of iron and compression members of wood, although the Howe truss is safer in this respect, inasmuch as its chords are continuous and able to resist compression. An insuperable objection to combination bridges is the difficulty of joining iron and wood together so as to resist accidental blows, and the necessity of using castings at the joints.

The use of cast iron is becoming obsolete among builders of iron bridges. It is hardly ever used except for joint-boxes at the ends of columns, etc., and many builders find they can dispense with it even there, as experience has shown that it is not a reliable material.

An all-important point in any bridge, and one that has been sadly neglected, is the floor. If we can make a floor that a derailed train will not break through, and can keep the wheels near enough to the rails to prevent any part of the train striking the trusses, we shall have gained a great desideratum. It is common practice to build through bridges 14 feet wide in the clear, and our passenger cars rarely exceed ten feet in width over all. This gives two feet leeway on each side. Now, by placing good strong guard timbers, firmly fastened so as to confine the wheels of a derailed car within a foot of their proper position, a train would pass over a bridge provided with an *indestructible* floor without material injury to bridge or train.

To provide such a floor, the ties should be thick enough so that a wheel will not break them in two, say eight inches thick, and near enough together, say six inches, so that a wheel will not drop down between them and strike on the side of the tie; then they should be long enough, say 11 feet, to give room to set jacks and blocking on in case a derailed train stops on the bridge. A car can be quickly replaced on the rails if there is a strong and level bed to set jacks on. There should be four lines of stringers under the ties, placed so that each stringer shall have a share of the weight of the trains. Then the ties will be well backed up, no matter where the wheels are. Track stringers of wood should never be used on an iron bridge: they are liable to take fire from passing locomotives, and their renewal is costly and troublesome. At the present price of iron it is poor economy to use wood where iron can be substituted. On an iron bridge the four stringers should be placed between rather than on top of the floor beams, as the floor can thus be greatly stiffened; they may rest upon the lower flange of the floor beam, or if the latter is very deep upon a piece of angle iron riveted to the web of the beam. The stringers should have a pair of vertical angle irons riveted through the web at each end, so that a pair of abutting stringers can be fastened by riveting through and through the web of the floor beam and the end angle irons of the stringers. [See fig. 1.] The floor beams should be placed at right angles to the track if possible. This can generally be done by a little study in arranging the panel points. As the ties are eight inches thick the stringers need not come within 5 or 6 inches of the top of the floor beam, and the top flange of the beam will then come between two ties. A very efficient sway-bracing can be made of angle iron riveted to the ends of the floor beams or chords, and passing diagonally under the track stringers riveted to the bottom flange of the latter where they cross. Such a floor as that would probably sustain a train moving at the rate of 30 miles an hour, even if some of the wheels were off the track.

Some engineers use an inside guard rail instead of an outside guard timber, while others use both. I advocate the latter custom as an additional safeguard, and no expense should be spared in preventing the recurrence of such disasters as the Athol and New Hamburg accidents. The outside guard timbers should be carried back a distance of 50 or 100 feet from the bridge, gradually flaring out to a distance of about 5 feet from the rail. The inner guard rails should be brought by a gentle curve to point in the centre of the track about the same distance from the end of the bridge. The apex should be made like the point of a rail frog. Some engineers set a large wooden post firmly in the ground and standing about five feet high, in range with the trusses on either side some 50 feet from the bridge. This is intended to protect the end of the bridge from blows of a derailed car or engine. I doubt the expediency of this arrangement, as the posts would rarely stop a car, and they would be likely to tear the car-body from its trucks, and it would then be more dangerous than before. It would seem better to avoid butting and to accomplish the object by a glancing blow.

Mr. Charles Latimer, Chief Engineer of the Atlantic & Great Western Railway, has invented a safety guard for railroad bridges that, it seems to me, must be very effective. It consists of some inclined planes combined with guard rails so as to automatically replace a derailed car. A somewhat similar arrangement has been used by Mr. E. C. Smeed, of the Kansas Pacific Railway. These replacers might not effect the desired result in the case of a broken axle: but in a great many cases, where a car leaves the rails through an imperfection in the track, this arrangement would no doubt replace the wheels upon the rails, almost without shock, thus avoiding all danger to the bridge. I am informed of numerous instances in which it actually has done so.

The necessity of having good, strong bridge floors is clearly pointed out in an article on the Oceanport drawbridge accident on page 377 of the *Railroad Gazette* of 1877. I am well aware that much that I have said this evening has been well said before, but it will bear repetition. If the plans recommended in this paper were adopted throughout the country, I believe the number of casualties due to railroad bridge accidents would be reduced more than 75 per cent.

In closing I would say that my thanks are due to the many engineers and other officials of railroad corporations through out the United States and Canada, who have so kindly furnished me with information asked for. Though most of them were entire strangers to me, they have promptly answered my questions, and frequently given further valuable intelligence. Without their aid my table of accidents would have consisted of little more than one column and one line, viz.: "Unknown—Unknown."

The Late John F. Tracy.

The death of John F. Tracy at Erie, Pa., on Wednesday, closes the remarkable career of one who has been long and notably associated with railroad operations and stock affairs, who rose from the ranks of railroad service to a place among railroad kings, had his era of wonderful power, and at the end of all came to the close of life a stripped and broken-down man. At the highest point of his hold upon railroad affairs, Mr. Tracy was the President of the Chicago & Rock Island and the Chicago & Northwestern railroads, having in his direct control a larger number of miles of lines of traffic and travel than had up to that time passed into the hands of any single individual in the country, comprising as it did the bulk of the entire railroad service west and northwest of Chicago, through Illinois, Wisconsin and Iowa. With this superb endowment of power and responsibility, Mr. Tracy possessed great individual wealth, at one time rated in millions, constituting him a power in Wall street that a few seasons ago was readily recognized by his strongest competitors, and held in awe by the smaller craft that sought to swim in his wake. Less known in New England, few business visitors at New York money centres or the great hotels of that city failed to see or have pointed out to them a short, stout man with an iron frame encasing an iron will, cool, imperturbable, and, as not a few will remember, pitiless in the many encounters through which he held his business way. His rise in the railroad service was neither a fortuity nor from favoritism. His career began just at the first expansion of our general railroad system. The son of an old and successful railway man of the minor type, his ascending plane started with the first superintendency of the Chicago & Rock Island Railroad, the initial illustrated page of which will long be remembered as the Rock Island Railroad excursion of twenty years ago, when Henry Farnham and his associates had just opened the line to the Mississippi River, and made the event national by the entertainment of a great gathering of distinguished guests, many of them our own citizens, who with their wives and daughters went out to be sumptuously cared for, and came home to the seaboard with eyes as large and round as the "silver dollar of our fathers" at the wonders of the West.

For several years following that event Mr. Tracy was the faithful, hard-worked operative official, faithful to his company, holding a gate of iron against all attempts on stockholders' interests, a self-centered, solitary man in his social life, with few intimates and no favorites. It is authentically remembered of him that he was the terror and destruction of all schemes and schemers against his company. A petty incident is characteristic. Sitting in his Chicago office in his shirt-sleeves, he was assailed by a glib-tongued emissary of a railway supply firm, who, getting the audience Mr. Tracy refused to none, went through his role briskly. It was Mr. Tracy's life habit to be a simply absorbent listener, but it was like putting your errand into the mouth of a bronze lion. He listened and that was all. Nothing in his face ever foreshadowed his answer. The drummer at the close of his appeal dropped into a confidential tone and said: "Mr. Tracy, the figures we give are to your company—*to you they will be five per cent. less.*" Without a word or a wink of intelligence Mr. Tracy arose, opened the door, sat down at his desk and became absorbed in his work. The visitor sat until the minutes began to drop as heavy as lead, and Tracy's pen scratched away in the silence like John Alden's in the poem. At last the waiting party said: "Well, Mr. Tracy, what do you think of my proposition?" Tracy turned with an affected air of the intensest astonishment. "What, you here yet? I thought you must have got a mile away. I opened the door for you half an hour ago." Later, when he became on his actual merits the President of the Chicago & Rock Island, and its actual executive head, he smashed with equal summariness schemes of far greater magnitude aimed at his favorite Rock Island interest, into the stock control of which he steadily grew until he engrossed it. It seemed to stand with him for all other earthly ties. He had no domestic life, sought none in the homes of others, was in the days of his best power a solitary in a great hotel, with no other hours and resources of relief than such surroundings furnish. The later and more widely famous seasons of his career were passed in New York, on the waves and tides of Wall street. He gave and he received tremendous shocks. If the blows he dealt were accompanied with no pity, those he took called out no greater manifestations of emotion. He once saw six hundred thousand dollars swept out in the crevasse of a broken pool, but his firmness, like his figure, was Napoleonic. Wall street will not soon forget the stout fighter, though latterly he had moved in its outer circles as a waning shadow. A career like his is full of incident readily to be gathered, but we seek only to present the man for the moral, but in what we have already outlined, our business readers familiar with stock affairs in Wall street during the best period that Black Fridays and Blue days innumerable have since cooled so effectually, will trace familiar lines in our rough cast.

At the end a broken-down, half-forgotten man comes to his death through a painful invalidism, and without fortune or prestige; the end comes just at the prime of life when a wisely successful human career should be ripening its richest autumn fruits. This man wrecked his health by utter unconcern at its demands, and left his great fortune, as so many others have done, where he found it, won from the surf in Broad street, to be carried back by its resistless undertow. The time is full of such lessons. Will the coming age heed them better?—*Boston Advertiser.*

Successful Conciliation.

The following account of the manner in which a "difference" between the locomotive runners and the officers of the Atlantic & Great Western Railroad was amicably adjusted, is given by a correspondent of the Locomotive Engineer's *Monthly Journal.* The method adopted to bring about that adjustment has often been recommended in these pages. Its success when fairly tried, as it seems to have been on the Atlantic & Great Western Railroad, will be a much stronger recommendation for its adoption, perhaps, than any other. That it will always be successful is not believed, because to be so both parties must be disposed to deal justly and abide by the agreements made. An arbitrary and overbearing officer is usually not disposed to deal justly and incapable of conducting such negotiations successfully, and unreasonable or headstrong men, especially if embittered by previous ill treatment, are often not inclined to accept an impartial decision, especially if they happen to be losers by such administration of justice. That conciliation may, however, often be successful in securing a satisfactory adjustment of differences of this kind is shown very clearly, we think, in the following letter:

Believing that the means employed to satisfactorily settle all existing differences that arise between employer and employe adopted by P. D. Cooper, Esq., General Superintendent, and the locomotive engineers of the Atlantic & Great Western Railway would be of interest to the general public, and a precedent of great value to managers and those employed by them, I herewith tender for their use the means so employed.

Some months since the Managers of the Atlantic & Great Western Railway conceived a plan to gradually reduce the pay of their engineers and proceeded to so notify them. The abruptness of the notice created a panic among the engineers and a committee was dispatched to confer with the managers. The plan adopted had evidently not been well digested, and the unequal effects its enforcement would have upon the different grades of engineers was pointed out to the managers by the committee. The managers comprehended the equity of the claims of the engineers, and with a nobleness of character, so rarely exhibited by their class, at once gracefully and generously withdrew their plan. In the language of General Devereux, "It was not a condescension or an evidence of weakness to perform an act of justice." At that meeting the committee were requested to notify their companions, that when, in the opinion of the management it should become necessary to reduce the amount of compensation allowed them, thirty days' notice should be given them. This conference developed an increased confidence on the part of the management in the integrity of their engineers, and on the part of the engineers, a feeling of gratitude toward their officers.

That these estimates were correct, let the sequel prove. On or about the first of December, 1877, Superintendent Cooper, through the General Master Mechanic, requested that a delegate from each division of the road should meet him at his office in Cleveland. The delegation was selected, and they promptly reported in person. The object of the conference was soon made known by Mr. Cooper, who, after expressing regrets at the necessity of narrowing down the expenditures by reducing the amounts allowed their class of labor, produced an elaborate plan devised by the management for a scaling down of the rates paid engineers, which plan he hoped would meet with their approval, to which end he presented copies of the proposed plan to each set of delegates, requesting them to return and place it before the body of engineers for their consideration.

As speedily as possible the engineers assembled, and the plan of the managers was calmly and thoroughly discussed. A letter expressive of their feelings was unanimously adopted, together with resolutions embodying their criticisms upon the propositions contained in the managers' plan, and others specifying conditions that in their judgment would be more satisfactory, etc. The committee at once returned to Cleveland, and presented Mr. Cooper with the following letter:

"MEADVILLE, Pa., Dec. 11, 1877.

"P. D. COOPER, ESQ., GEN'L SUPT. A. & GT. W. RY.

"DEAR SIR: Your request to meet and consult with a committee from each division of the Atlantic & Great Western Railway was in pursuance of a former agreement to so consult or notify them of the determination on the part of the general officers of the road to make a reduction of the salary paid said engineers. In this respect you have amply proven your good faith, and in presenting to said committee your plan of reduction, your request that said plan be placed before the engineers of the Atlantic & Great Western Railway for their consideration has won for you their esteem and entitled your plan to a respectful consideration.

"The manner in which you presented your plan, is evidence that you did not regard the provisions of said plan as your ultimatum, from which there was no appeal and whose propositions were not subject to modifications. Before notifying you of the result of our deliberations so far as your plan is concerned, permit us to present our views on the reduction of rates paid railway operators for services. We do not deny the right of managers to offer such compensation for services as they may elect are just and sufficient, and the reserved right of managers to adopt such rules and regulations for the government of employes as they may deem necessary, is also incontrovertible. But when the reduction proposed is unequal in its effects upon any class of operatives it is unjust, and becomes at once a subject for consideration and arbitrament. When rules and regulations are adopted of such a character that subjects the employe—who is endeavoring to fully comply with the rule—to unnecessarily lengthen the hours of labor beyond the period of time required by other roads for the same service, said rule becomes onerous, and is also a subject of arbitrament. When these conditions arise, the true plan to secure equitable adjudication of the difficulty is, that the manager and a selected committee of employes meet together, respectfully consider the points at issue, and arrive at a satisfactory settlement. The plan usually adopted is for the managers to publish their terms without consulting the party of the second part, and when indignation and a feeling of repudiation fills the hearts and minds of those who regard the terms offered as damaging to their interests and an insult to their manhood, they are very reluctantly permitted to approach the General Manager, and are in most cases dismissed without an encouraging sign. Is it any wonder that they return to their labor humiliated, yet defiant?

"Upon you, sir, rests the honor of being the first general officer of any railway in this country that has dared to submit your plan for changing the rate paid employes to the consideration of the employes thus affected. This action of yours is hailed as the dawn of a millennium in the settlement of all differences that may arise between employer and employe. Had the managers of our railways adopted your wise course, the sacrifice of life, the destruction of property and the defiance of law that prevailed in this country during last July, would never have occurred.

"This letter will be presented by a chosen committee, who will also present for your consideration our plan for the adjudication of the rates to be hereafter paid the engineers of the Atlantic & Great Western Railway. May your deliberations be characterized by forbearance, and your conclusions be just and honorable.

"By the locomotive engineers of the Atlantic & Great Western Railway in convention assembled."

This letter was received in the same spirit in which it was presented. After a general discussion of all the plans submitted, a final result was reached. In reaching this result, mutual concessions were made, and an entirely satisfactory plan adopted and duly authenticated.

The object of this communication is to convince managers and employes that the shot-gun policy is a relic of barbarism; that unjust discrimination in the scale of compensation for labor, the enforcement of arbitrary rules and regulations will produce unsatisfactory results, as the fruits of the events of July, 1877, bear abundant testimony.

PERSONAL.

—Mr. Wm. Wing, for many years and until 1876, Secretary and Treasurer of the Central Ohio Railroad Company, died suddenly at his residence in Columbus, O., Feb. 13, of heart disease. He was 78 years old, and had lived in Columbus 30 years.

RAILROAD GAZETTE

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CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

NEW YORK RATES AND NEW YORK BUSINESS.

The conference held last Saturday between representatives of the New York Chamber of Commerce and other organizations of merchants and the managers of the New York Central and the Erie railroads, at the office of the President of the former, whatever may be its immediate results, is an encouraging sign. Hitherto shippers and carriers seemed to have avoided intercourse and negotiation except in their direct business transactions. The former have not failed to complain abundantly of their treatment by the latter, but their complaints seem to have been directed to each other or to the public, and not to those who were responsible for the conduct of the transportation, and who alone could give the reasons (if they had any) for the policy complained of, or provide a remedy. Not but what individual shippers are ready enough to put forward and insist upon their individual rights in each special case. They make every exertion to secure the lowest rates obtainable, and insist upon the proper handling and prompt and safe delivery of the goods which they ship. It is not the treatment of special cases but the general policy of the railroad which they neglect to discuss with the railroad authorities. Why rates are as low from Boston as from New York, and lower from Philadelphia and Baltimore, why certain goods are put in the first-class at 75 cents per 100 lbs. and others in the fourth-class at 40 cents—questions like these the shipper feels not to be especially his business, but the business of the mercantile community of the city, or of the whole body of merchants of his special branch. He does not feel authorized to speak for the whole trade, though he may feel very strongly how the policy affects him, and his account of it would be valuable as a contribution toward establishing the condition of trade as affected by the current railroad policy. When scores of shippers have said that they cannot sell salt in the West because the Baltimore merchant has the advantage in rates, or when a number of manufacturers have complained that the Western establishments are taking all their Western trade, and that they cannot hope longer to compete with them without a reduction in the cost of transportation of their special goods, they make an impression and are likely in course of time to affect the action of the carriers.

Doubtless, however, more effective and more trustworthy action may be had through commercial organizations, if such exist, which really represent the whole body of merchants. Discussions within these organizations will make it appear how large a proportion of the trade has grievances or desires changes, so that, if proper pains are taken, when the Chamber of Commerce or the Produce Exchange presents its requests to the railroad companies, the latter may be reasonably sure that what is requested is really desired by the merchants, and not by a portion of them, and perhaps opposed by another portion.

Again, when requests are made by representatives of the whole body of merchants, time can be taken to discuss the subject thoroughly, to explain the circumstances which led to the adoption of the policy complained of, and those which will permit its modification; to present some of the limitations to the arbitrary action of the managers, who often, even by intelligent men, are supposed to be free to make rates and differences in rates at their pleasure, when in fact they are limited in fixing their prices for the most part as much as the merchants are in fixing theirs, with the disadvantage for the railroads that they cannot hold their goods, but must sell them every day.

The immediate occasion of last Saturday's conference was a state of things that had already passed away when the conference was held—the contest over Boston shipments, which for a time reduced the rates there much below the regular prices, and also below the New York rates. It is noticeable that this complaint, like most complaints concerning railroad rates of late, was not made because the sufferers were charged too much, but because their competitors were charged too little for the services of the carriers. No one, or scarcely anyone, had complained of rates since they were established and regularly maintained and charged to all alike; no one could reasonably, for they were extremely low; probably lower than are charged any where else in the world for carrying goods of the same kind; certainly lower than is charged regularly for carrying much coarser products from the West to the East. But discrimination is as legitimate a subject of complaint as extortion; and in this case the railroad war at Boston actually made for some time a large discrimination against the New York and in favor of the Boston shipper. To a considerable extent, Boston is a competitor of New York for the supply for merchandise to the West. It would be greatly helped in its competition, at least with all the coarser goods, by an advantage of 20 to 50 cents per 100 lbs. in the transportation charges. If the difference were permanent, probably some branches of business now flourishing in New York would have to be abandoned. The railroad war at Boston, then, which was reducing the income of the railroads on Boston shipments by 50 per cent. or so, was at the same time lessening the sales and the profits of New York merchants and increasing those of Boston merchants. The former complained, as they had a right to do; they did not, however, generally ascribe the discrimination to the proper cause. Generally they seemed to have assumed it to be due to wanton action on the part of the New York roads, and of the New York Central & Hudson River especially, which latter somehow seems to be suspected of preferring to carry business over 300 miles of its road at half a cent a ton a mile to carrying it over 450 miles of its road at a cent a ton a mile. That is about what it amounts to, and it is simply absure to suppose that that company prefers New England business to New York business, and still more that it prefers to carry Boston traffic at less than New York rates. It ought to be evident to anyone who thinks twice on the subject that even when the Boston rates are maintained as high as New York rates, the New York roads make more money by carrying from New York. The New York Central, for instance, gets about 45.7 per cent. of the New York-Chicago rate, and less than 30 per cent. of the Boston-Chicago rate.

Now this may not prove that this or any other New York road will always "protect New York" by its rates; but it does prove that it is greatly to its disadvantage to have a discrimination against that city, and that its managers, if they desire to have their road make large profits (and we believe that no one disputes this), will do their best to prevent such a discrimination. Unfortunately for them, however, they are not able to dictate what the other railroads shall do. When the Vermont Central and the Grand Trunk decide to reduce rates out of Boston, all the orders that the New York Central or the Erie may give will not prevent it; there is no possible way to prevent a rival road's underbidding you except by carrying for nothing, and the owners of the railroads will hardly excuse their managers for doing this, even to "protect New York."

But the complaint was made that not the Grand Trunk only but the New York Central and other roads took traffic from Boston at less than the New York rates, and this was reckoned a great fault in them. Doubtless they did so carry: but that it was a fault is not so certain.

What was injuring New York business was the fact that Boston shipments were going west at lower rates that New York shipments, not that they went part of the way at such reduced rate over the New York Central or any particular route. The New York Central and the other New York roads might have maintained their rates out of Boston and it would not have helped matters a whit for New York. The Grand Trunk would have carried all the business, the difference in favor of Boston would have remained, and Boston would have diverted business from New York; and this might have continued indefinitely without very large losses to the New York Central and still less to the other roads, while no charge of discrimination could have been made against any New York road.

What the New York merchants virtually claimed was not merely that the New York roads should carry as cheaply from New York as from Boston, but that they should carry as cheaply from New York as any other road should carry from Boston. This is what is called "protecting New York," and it was the failure of the New York roads to do this just as soon as the Boston rates were broken that caused the complaints. The merchants are inclined to make the New York railroads responsible not only for their own conduct, but for that of all the other railroads to all the other seaports that compete with New York.

Now this is an unreasonable requirement. It is proper to hold any railroad to a strict account for what it does itself, but it should not be made to answer for what its rivals do, especially when the community so holding objects to any positive combination or agreement of these different roads.

It seems to have been taken for granted that as soon as the Boston rates were reduced, the New York roads should have made equal reductions in New York rates, which of course would have resulted in corresponding reductions at Philadelphia and Baltimore. This doubtless would have suited the merchants, and if the New York shippers had been the sole owners of the roads this might have been a proper policy. But the railroad companies have to consider other interests than those of Eastern merchants—the interests of other shippers as well as those of their stockholders. The business out of New York is estimated to yield about $10,000,000 a year; that out of Philadelphia and Baltimore will add considerably to this sum. The Boston business is reported to be a very small fraction of the New York business alone—that is, that part of the business for which the several lines to the West compete. Was it reasonable, then, to expect a New York road to sacrifice, without hesitation, $5,000 a day at New York because it could no longer make $500 a day at Boston? Would it have been sound business policy or justice to stock and bondholders to make the whole great New York business profitless before a strenuous effort had been made to restore the rates on the small Boston business? We believe that the owners of the railroads and reasonable men generally will endorse the policy actually pursued, by which the rates were maintained throughout on New York traffic, the rates finally restored on Boston traffic, and an agreement among all the carriers made which makes it less probable than it ever has been before that shipments from New York will hereafter have to pay more than Boston shipments. This latter is just what the New York merchants should welcome. It gives them that assurance of a fair field and no favor which they have demanded, and which they are right in endeavoring to secure. We beg that they may not forget by what means it is secured; that it is by a combination of the railroad companies; that it is impossible to secure such a state of things permanently without a combination; that the unrestricted competition which many of them call for must often, as it had done before the Boston agreement, result in a great discrimination against them; that in railroad business unrestricted competition invariably results in discriminations against some places or some individuals; and that if they desire the advantages of steady, reason-

able, equitable rates, without discriminations against them, they should support the railroad companies in their agreements to maintain such rates without discriminations for them.

New York business (not so much that in merchandise shipped from the city to the interior as that in produce received from the interior and exported) has been of late years subjected to increased competition from the other cities—chiefly Philadelphia and Baltimore. To meet this competition it is necessary to reduce the charges between the producer and consumer on the goods which pass through New York. These charges are for many different kinds of service, and go to several classes of persons. The transportation charge is one part, and the merchant's charge another. The latter may itself be divided into several parts, some of which are wholly beyond the reach of either carrier or merchant. One of the largest, perhaps in New York the largest of all, is rent. The rents paid in New York, we venture to say, are equal in amount to the entire transportation charges on the business passing through New York. Nearly the whole amount of these rents are a charge upon New York business, and must be paid from the profits of that business. They affect nearly everything bought and sold in the city—the cost of cartage, the wages of labor, storage, commissions, etc. This is true of business everywhere, and New York is not singular in this respect. But it is evident that the charges on business passing through any of the seaports must be very greatly affected by the rate of rents. Yet we hear very little of the great disadvantages of the New York merchant due to his much higher rents compared with those of the Philadelphia and Baltimore merchant. It seems to be taken as a matter of course that this difference should exist; but a good deal of complaint is made because the charges for transportation by rail are not *less* than to the other ports.

New York always has enjoyed, and does still, taking the year through, lower average rates of transportation than any other American city—lower probably than exist elsewhere in the world. Formerly, however, when most of the business had to be done by water, its advantage in this respect was very much greater than it is now. The construction of railroads has tended to equalize the rates of transportation to the different ports. New York rates, commissions, storage charges and the like were established when it had almost a monopoly of the export business, and had very little competition in the import business. Naturally every interest is loath to give up any part of its profit. Each tries to shift upon the other the burden of meeting the increased competition of the other cities; all or most by this time probably have had to give up something; yet a comparison of the various charges at the different ports is said still to make a very unfavorable showing against New York. Rents there have fallen greatly within a few years, but perhaps not more than at other ports, and the fact remains that the burden of rents continues very much heavier on New York than on Philadelphia and Baltimore business. Yet the chief complaint is not against those charges which are greater at New York than elsewhere, but on the transportation charges, which, at worst, are as low at New York as elsewhere.

Now it is no part of the New York railroad companies' business to secure at their own expense such a state of things as will enable New York landlords to get higher rents and New York merchants to make larger profits or pay a greater amount of unnecessary charges than are to be had at competing cities. The railroads have done their share when they have secured for New York rates as low, in proportion to service performed, as the other cities enjoy; they cannot reasonably be called upon to meet the lower rents, lower wages, lower taxes, and simpler, cheaper methods of conducting business and handling goods at rival cities. Very large reductions have been made in the differences between the rates to and from New York and those to and from Philadelphia and Baltimore. The differences now are much less than in proportion to distance, and still less than in proportion to cost, the terminal expenses to the railroads at the other cities being so much less that the Pennsylvania Railroad, which works the road between New York and Philadelphia, finds it more profitable to leave its freight at Philadelphia than to carry it on to New York for the trifling addition to the rate.

The causes which tend to divert traffic from New York will be found elsewhere than in unfavorable railroad rates, and if they are overcome by the action of the railroads alone, the latter will have to carry at a less rate to New York than to the other cities—that is, the New York railroads will substantially have to pay the higher rents and other charges which tend to drive business away from New York.

INVENTORS AND INVENTIONS.

It would be difficult to analyze and describe the cause for the sinking of heart which comes over a kindly-disposed railroad officer or editor of a technical newspaper when the conventional inventor enters his office with his model or drawing under his arm. The person first referred to knows by experience what to expect. He has learned that nine inventors out of ten are, at least temporarily, afflicted with more or less mental aberrance; that the effect of the exercise of the inventive faculty on such minds is analagous to that of looking through the small end of a spy-glass, that is, it brings distant objects near, and magnifies them to an unnatural degree, while at the same time the field of vision is very small, and therefore it is impossible to observe the proportions of the objects looked at relative to those which surround them. The receiver of such calls knows, too, that the great majority of inventors are entirely without that special training which alone would qualify them to do what they have undertaken, and that they have so little elementary knowledge of subjects in which they assume to be teachers, that it is impossible to discuss their inventions intelligently with them, and therefore it is necessary to treat them either as children are treated, who have some childish dream, or else tell them the plain truth as harshly as may be, which is sure not to be complimentary. It is found often that the genius who comes with a model of, say a new plan of bridge, knows absolutely nothing about the nature or the method of calculating the strains on such structures, and to explain them to him it would be necessary to put him through an elementary course of instruction of, say several hours a day for a month or a year, according to the state of enlightenment or density of his mind. Such an inventor is absolutely incapable of considering such a subject in any intelligent way whatsoever. If it were practicable, it would be the truest kindness to restrain him from speculating about it until he had mastered a certain amount of preliminary knowledge, which would supply him with what may may be called *the tools for thinking* on his pet subject. It usually happens too that the conceit and assurance and untruthfulness of inventors are in proportion to their ignorance. To speak plainly, some of them will lie in the most unblushing way. "The biggest thing out," "there are millions in it," "the High Level Bridge Company have therefore offered a half a million for the right to use it," are the facts which their imaginations paint, and which are presented soberly to their hearers. Among the most intolerable bores are the inventors who tell you confidentially that they "will let you in on the ground floor" if you will only find for them the right man to "push" their inventions, and who "will put in sufficient capital." etc., etc., etc., to the long, wearisome end. Often the inventor is a mild-mannered, amiable sort of person, who has dreamed until he is unable to wake himself, and who has thus created a sort of romantic hallucination that he has a great and valuable invention which is not recognized, and secretly he feels that he is a neglected genius! The mildness of his manners and the gentleness of his ways often secures for him consideration which, perhaps, is not deserved, or else he is brutally snubbed or insulted, which adds the delight of martyrdom to his other cherished anguish.

It would be impossible in an article like this to describe even a small proportion of the different types of the conventional inventor. There is the Philistine inventor, who picks his teeth while he talks to you, and winks his eye when he tells how he "fixed" certain men "all right;" there is the superannuated inventor, who has been engaged in that occupation all his life, and who presumes on his age, and feels that it should give merit to his ideas; there is also the amateur inventor, who makes his first venture on some crude device which is utterly impracticable and would be useless even if it were not impracticable; and so on, they could be described indefinitely. The chief characteristics of all those to whom we refer is that they have no definite or accurate knowledge of the subjects which engage their attention. They generally seem to be devoid of that faculty, which is indeed rare, of being able to collect all the attainable information concerning any subject, and then deducing conclusions from the evidence and from the evidence alone. Many of them resolutely ignore knowledge which is not in accord with their preconceived ideas, or which does not help to prove what they want to prove. Generally, too, they seem to think that in order to exercise their inventive ability on any subject successfully it is entirely unnecessary to have any considerable knowledge about what they are inventing. Genius, they think, will overleap all the ordinary bounds of human intelligence, but they forget that, as some one has defined it, genius is "an infinite capacity for taking pains," and it might be added of understanding things.

So great is the annoyance to railroad managers and others from this class of men described, that the very name of inventor has, to a certain extent, become odious, and it seems as though railroad companies are likely to unite in a league against all patents, owing to the unjust demands which are often made by those who control such franchises. The abuses of the patent system and the faults of inventors seem at present likely ultimately to deprive even useful inventions of the reward which justly belongs to them. Those who are old enough to remember back twenty-five or thirty years may recall how much honor and use was at that time assigned to inventors and invention in popular literature. The advance of civilization was made to appear to be dependent upon the discoveries of inventors, and such men as Watt, Stephenson, Fulton, Morse, Howe, Hussey and many others, were held up to the rising generation as public benefactors. At that time every effort in the way of legislation and public sympathy seemed to be to honor inventors. At present, owing to the mental and moral defects of many who claim to be geniuses, there is danger that the legitimate work of inventors may be discouraged, and they dishonored. Even now the fact that an engineer has made a successful invention would, in many cases, be an obstacle in the way of his advancement or appointment, and it has almost come to be regarded as unprofessional in some quarters to take out a patent. In many directions there is a strong feeling in favor of the total abolition of the patent system. Now, while many of the evils which are practiced under the latter are freely admitted, yet before the railroad companies and large manufacturers commit themselves to any measures really adverse to the rights of inventors acquired by the granting of letters patent, it would be wise to hesitate a little and reflect upon the results which must inevitably follow from such a course, and see, if possible, what is actually accomplished by inventors and our patent system.

A common argument which is often used by those who are obliged to pay inventors for the use of their ideas is, that the latter have no right to their invention simply because they happened to think of it first, and thus deprive a successor of what he might have devised himself. To follow this question back would lead to the discussion of the principles on which all rights of property rest, and about which there is now a good deal of confusion in the minds of many people. Ignoring such abstractions, the general principle which schoolboys formulate in the saying that "he who finds keeps," and which has recently been embodied in a legal decision that the finder may hold what is found against the whole world, excepting the real owner, will suffice to establish the right of inventors to patents. The same principle exists in the occupation of our public lands, and in other practices and forms of law, so that it seems safe to adopt it when it applies to "any new and useful art, machine, manufacture or composition of matter;" or, to quote from the first page of Curtis' Treatise on the Law of Patents: "Other persons than the first inventor of a thing had the same right to invent it that he had; but as he has been the first to invent it, the patent system—proceeding on the policy of encouraging the exercise of inventive talent by securing to the inventor an original property, which, without protection, would have rested only upon a principle of natural justice—takes notice of the exclusive right of that first inventor, and makes it effectual by assuming that he who has first exercised the right of invention has bestowed something upon society which ought to procure for him thereafter, at least for a time, the exclusive right to make or use that thing."

But even independently of the utility of discovery, the fact that a person acquires a right to it has the effect of leading him to introduce it, and in doing so, to explain it, and thus, as an educational influence, the system of patents has a very great effect upon the public. Without the stimulus which the right to the invention gave to those who have devised the improved systems of train brakes, it is safe to say that they would not, during the lives of those now actively engaged in the management of railroads, have reached their present state of perfection; and if they had, they would not have been generally used. Not only has the patent system enlisted the most able mechanical engineers in the world in perfecting them, but these same men, or others better qualified for the duty, have become apostles and devoted their whole minds to enlightening railroad managers all over the world on the subject. It has resulted in the most splendid series of experiments perhaps ever made to demonstrate certain questions which were in doubt, and nothing which ingenuity could suggest has been left untried to make the various sys-

tems effective. The same thing is true of many other inventions. The inventors themselves, when once protected by a patent, become the most zealous instructors of the public. If some one had patented the use of check-chains on cars, doubtless every railroad officer in the country would have had their usefulness presented with the most copious argument, and supported by the most abundant statistics. Or if any one had the exclusive right to use semaphore signals, half the railroad men in the country would not now be ignorant of what a semaphore signal is, nor of the advantages which it possesses over other forms, some of which almost require the application of the spectrum analysis to determine what they mean.

If then railroad officers should array themselves against inventors and the patent system, they would be acting with somewhat the same wisdom that the wise man did who sawed off the limb of the tree on which he sat. That there are grave abuses, and probably some defects in our patent system may be true; and that there is a great deal of injustice and swindling under color of the patent law is also true; but the one could be reformed and the swindlers restrained without abolishing the patent system altogether. If it were possible to enact and enforce what might be called an inventor's qualification law, which would oblige every inventor, before his application for a patent was received, to show that he was in some way qualified to improve or devise a new and useful invention pertaining to the subject of his patent, it would perhaps spare both editors and railroad managers many weary hours, and much acute suffering from bores whose ingenuity often seems to be exercised more on the methods of wordy torture than on the subject matter of their patents.

The Proposed National Accident Commission.

Government investigation of railroad accidents is again proposed in Congress, Mr. Garfield having introduced the bill which he brought in last year, and which was not reached at the close of the session, largely owing to the time taken by the discussions over the presidential election. This year the bill is introduced late, and almost the whole attention of both houses is at present absorbed by financial questions. The latter, however, now seem likely to be disposed of, and there is no such limit to this session of Congress as there was to the last one, which expired on the 4th of March. Mr. Garfield's bill (if it is the same as last year, which we presume to be the case) provides for the appointment by the President of three officers of the Engineer Corps of the United States Army as commissioners "to inquire into the number, causes and means of prevention of accidents on railroads in the United States, the number of persons killed and injured thereby, and the most approved means of preventing the occurrence of the same." It it made the duty of these commissioners to "investigate such accidents on railroads as may in their judgment be accompanied by circumstances of an unusual or unexplained character, and specially report upon the same," and also to make for each year "a general report upon the subject of accident in the United States." Thus the commissioners are to have no other power than to make investigations and recommendations. They could not in any respect interfere with the management of the railroads; their power for good or evil would be limited to the publication of the facts, with whatever weight their recommendations might carry, which would probably be comparatively little until the same men had had some years' experience in making investigations. This is substantially the same power as is possessed by the inspectors of the British Board of Trade, at the head of whom Sir Henry Tyler, the present President of the Grand Trunk Railway, earned his reputation as a railroad man. The work proposed by the bill very much needs to be done, and the confinement of appointments to the Engineer Corps, is probably, in the actual condition of our civil service, the best guarantee that can be provided for general technical capacity and the other still more indispensable requirements—integrity and independence. Engineer officers, however, would have the whole business to learn, and it would be an immense gain if experienced railroad officers could be had with the same guarantees of independence and capacity. How this could be secured, however, it is not easy to see, unless by the addition to the Engineer Corps of former officers who have been railroad men since their resignation—such men as Gen. N. J. T. Dana, Gen. G. P. T. Beauregard, H. B. Ledyard, Gen. James H. Wilson, Col. Geo. T. Balch, and doubtless others who have won reputation in the technical corps of the army, before they saw railroad service. Such men, however, usually cannot be tempted back into the army, and if they could be it would only be by giving them high rank, which would make trouble in the army again. On the other hand, if the appointments are not limited to the army, there can be no assurance that incapable politicians will not have the appointments, and the lack of permanency in the positions would make it impossible to get the best men for them from civil life. Great temptations may be offered to those who occupy such positions, and this makes unquestionable integrity and perfect independence the first requisites, though the work will be comparatively ineffective without a thorough knowledge of the business of railroading—of the conduct of the business, as well as of the construction of road and rolling stock.

The Illinois Central Report.

The Illinois Central Railroad Company makes an interesting statement of its buisness in 1877 in its annual report, a summary of which appears elsewhere, and which we hope to consider more at length at an early day. What is most remarkable in it is that with a decrease of 6½ per cent. in gross earnings the *net* earnings were nearly 8½ per cent. greater than in 1876, there having been a decrease of no less than $723,200, or 18¾ per cent., in the working expenses, which is a remarkably large reduction to make, even in these times of rigid economy, the more so as it is only the last step in a continuous series of reductions, as the following table of gross earnings, working expenses and net earnings for a series of years will show:

Year.	Gross earnings.	Working expenses.	Net earnings.
1870	$8,678,958	$4,759,008	$3,919,950
1871	8,401,142	4,641,920	3,759,222
1872	8,026,754	4,846,854	3,179,900
1873	8,268,325	4,600,109	3,668,216
1874	7,900,721	4,651,151	3,870,570
1875	7,802,556	3,989,447	3,813,109
1876	7,040,969	3,845,643	3,195,326
1877	6,639,845	3,122,443	3,517,402

We hardly know anything that shows more strikingly the great changes in the conditions of railroad working within the past few years. It is true that special circumstances have contributed to reduce the earnings of the Illinois Central more than those of most roads; but the causes which have reduced the working expense are for the most part general. The first year in the table is that in which the company for the first time worked the whole of its present mileage—1,107⅔ miles. Since then the gross earnings have fallen off more than $2,000,000; the net earnings, only $400,000. The working expenses in 1877 were about 35 per cent. less than in 1870. And nearly all the reduction in expenses has been made since 1873; the company's gross earnings have fallen off $1,600,000 since that year, and still its net earnings were but $150,000 smaller in 1877 than in 1873.

A very large part of the saving in 1877 was in maintenance of way expenses, which were $435,000, or 40 per cent., less than in 1876, and $259,000 of this saving was in the item of rails, only about 55 miles of track being renewed in 1877, against 202 in 1876. The most used parts of the road are now pretty well laid with steel, which reduces the necessary renewals. The engine mileage was also reduced 7 per cent., and a reduction of 8½ per cent. in locomotive expenses per mile run is reported. There is a saving in nearly every item of expenses, but the amount is not very large except in maintenance of way, though $88,000, or 13.4 per cent., is saved in maintenance of equipment. These two items make up about 70 per cent. of the total decrease in working expenses.

This company now controls a line from Cairo to St. Louis, making it the great north-and-south line of America. Its interest in this road makes it desirable for it to cultivate New Orleans business as far as possible. It seems to have done so with some effect in 1877. That year just about one-half of its freight traffic was moved northward, against 45¾ per cent. in 1876. This, however, was not due so much to an increase in traffic southward as to a decrease in traffic northward. The change in proportion, however, is only a reversion to a condition existing previously to 1876, 56 per cent. of the traffic having been moved southward in 1875. A better idea of the southern business, however, may be had from the report of the amount of freight delivered at Cairo. This was 233,145 tons in 1877, against 173,881 in 1876—a very noticeable increase. The deliveries at Chicago meanwhile were 567,928 tons in 1877, and 630,202 in 1876.

The Iowa traffic has not made that progress which was reasonably to be expected of it, or rather it has made a reverse progress, considering the good character of the country on the road and the enormous room there for further development and cultivation. The figures given for the total shipments of freight from all the Iowa stations for five years show a decrease every year, amounting from 1873 to 1877 to 18½ per cent. About one-half of the leased Iowa road passes through a very thinly settled country, which in previous years has suffered from the grasshoppers, but which is probably capable of sustaining as large an agricultural population as almost any district in the country. The rest of the Iowa lines pass through a fairly settled country, which, however, is very unfairly cut up by railroads, which are decidedly too many for the business.

This company's land grant is now substantially exhausted. It has, however, well served its purpose, the company's funded debt having been reduced to a comparatively small amount. This road, indeed, has a lighter debt probably than any other in the Northwest which has so large earnings per mile. This it is which enables it to pay dividends of 4 and 6 per cent., when as now its gross earnings are but $6,000, and its net earnings available for interest on bonds and dividends on stock but $2,300 per mile of road.

New Cars for the New York Elevated Railroad.

Two new cars of different design from those heretofore used have just been placed on this road. They were designed and built by the Jackson & Sharp Company of Wilmington, Del. The car bodies are 41 ft. long by 7 ft. 6 in. wide outside, and are made without end platforms, the intention being to have passengers enter and leave through side doors in the centre of the car, which are 6 ft. 9 in. wide. The ends of the bodies, instead of being of the usual form, are round, similar to some of the Woodruff sleeping cars. There are doors at each end, which are intended to be used only by the conductor. These doors are 1 ft. 9 in. wide. The windows are 3 ft. 3¼ in. wide, glazed with plate glass and with simply a post between them, and therefore the car is unusually light and cheerful. The sashes are all counterweighted, so that they can be easily raised.

The seats are arranged along the sides, as in common street cars, and are made of perforated veneers. The inside is finished with black walnut, the sashes, blinds and doors being of mahogany. The windows in the clear-story are glazed with blue crystalline glass. The ventilation is effected by means of Howard's ventilators, and also by sliding sashes in the end doors. A novel feature, and one which produces a beautiful effect, is the use of tiles in the clear-story. The ventilators are placed between each alternate pair of windows, which leaves a space the size of the ventilators between the intermediate windows. Each of these is fitted with a beautiful ornamental tile, the patterns of which are various. The effect is very good, and could be employed with great advantage over the usual style of car decoration.

One of Cox, Whitman & Cox's stoves is placed alongside the centre door. The brake-wheel is in the same position opposite, and is worked from the inside of the car. As the passage to the side doors takes a large space out of the seats, a movable one is arranged which slides under the main seat and in front of the doors. As the doors on only one side are used in running up the line, and the opposite ones in coming down, these movable seats on one side need not be disturbed during the up trip, and the opposite ones can be used on the down trip.

Instead of the ordinary head lining, a new idea is introduced. The inside of the roof is covered with ordinary oil or painted cloth, with the painted side up. The under side is then papered with a beautiful "Florentine" pattern of paper. This can be removed and the car repapered, when it becomes soiled, at very little expense. In appearance, it conforms to good taste very much better than the atrocious chromo styles of head linings which are now so universally used.

The running gear of the cars consists of well designed trucks, which have Moore's elastic steel-tired wheels 28 in. in diameter. The draw-bars are attached to the trucks instead of the car bodies, and the coupling pin is placed near the centre pin or king-bolt of the truck, and is inserted and withdrawn by means of a small trap-door in the floor inside of the car. The bodies are trussed underneath with strong truss rods, which are needed on account of the frame being cut in two by the side doors. The bodies outside are painted a dark claret or maroon color.

The weight of the cars is said to be 19,000 lbs.

New Safety Heater for Passenger Cars.

During nearly the whole of this winter there has been in use on the Camden & Atlantic Railroad a new safety car-heater which has some excellent features. The cars are heated by steam which is supplied from a boiler in the baggage car, and is then conducted through the whole train by means of pipes with flexible joints between the cars. The boiler is one of an ordinary vertical type, such as is used for portable engines.

The joints of the pipes between the cars are made so as to be self-coupling when the latter come together. An important feature in the arrangement is the fact that there is no fire in any of the cars excepting the baggage car, and this can be more conveniently managed by the brakeman than separate stoves could be. In the one case one fire must be looked after; in the other as many as there are cars. It is also evident that in case of accident the danger of burning up the train is very much less with one fire than it would be with more.

This arrangement has been in constant use for over three months, and the train to which it has been applied has, we believe, never lost a single trip on account of any defect in the heating apparatus. Messrs. Wood, Scull & Snyder, of No. 41 South Fourth street, Philadelphia, are the patentees of the invention, and may be addressed for further information.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads, as follows:

Pittsburgh, Castle Shannon & Washington.—Extended southward 4 miles to Finleyville, Pa. It is of 3 ft. gauge.

Milton & Sutherlin.—Extended southwest 4 miles to Milton, N. C., completing the road, which is of 3 ft. gauge.

Indianapolis, Cincinnati & Lafayette.—Track is laid on the *Lawrenceburg Cut-off* from Guilford, Ind., east to North Bend, O., 9 miles.

Indianapolis, Delphi & Chicago.—Completed from Rensselaer, Ind., east by south to Bradford, 17 miles. It is of 3 ft. gauge.

This is a total of 34 miles of new railroad.

THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS seems now to be losing whole divisions as well as members. As to the latter, Division No. 50 (Pittsburgh) is charged in the February number of the *Journal* of the Brotherhood with 63 members expelled "for non-payment of dues," and one "for embezzlement of funds belonging to the Grand International Division;" Division 96 (West Chicago), has 19 men expelled "for violating their obligations;" Division 119 (Ottumwa, Iowa.), 13 men for the same cause; while the total expulsions from all divisions amount to 136, all but a few for these two causes. What is more notable, however, is that no less than *twenty-three* of the 199 divisions have disappeared from the list, including No. 5 (Norwalk, Ohio), No. 13 (Concord, N. H.), No. 14 (Utica, N. Y.), No. 29 (Brookfield, Mo.), No. 38 (Martinsburg, W. Va.), No. 39 (Seymour, Ind.), No. 69 (Atlanta, Ga.), No. 74 (Harrisburg, Pa.), No. 79 (Malone, N. Y.), No. 82 (South Easton, Pa.), No. 85 (St. Albans, (Vt.), No. 94 (Mt. Savage, Md.), No. 115 (Knoxville,

Tenn.), No. 119 (Pittston, Pa.), No. 120 (Mobile, Ala.), No. 122 (Wilkes-Barre, Pa.), No. 140 (Charleston, S. C.), No. 147 (Wheeling, W. Va.), No. 148 (Mt. Vernon, Ill.), No. 149 Montgomery, Ala.), No. 156 (Birmingham, Ala.), No. 162 (Waverly, N. Y.), and No. 174 (Piedmont, W. Va.) All of these except No. 85 (St. Albans) and 174 (Piedmont) were reported in the January list, though of course they may have been practically dissolved before, without being removed from the list. These divisions are very widely scattered from north to south and from east to west, on roads where there have been unsuccessful strikes and on roads where there have been no strikes, which is some indication that the men are leaving the Brotherhood for general rather than special causes—possibly from a conviction that just now it costs more than it comes to. How great were the expenditures in connection with the strikes cannot be known; but they must have been considerable, and still there have been complaints that the Brotherhood did not give the assistance which it promised to men who lost their places. The society, however, continues a numerous one, if not as strong as it once was; and probably it would very soon recover strength should anything occur which would make the enginemen feel the need of union.

THE CHICAGO, BURLINGTON & QUINCY REPORT reaches us this week too late for any extended comment, though we are able to give a resume of the report of Mr. Robert Harris, the President, which is chiefly devoted to the financial condition of the company. This report is extremely satisfactory, the net earnings of the year, more than half of which was exceptionally unfavorable (though the rest was exceptionally favorable), sufficing to pay interest, rentals, 9 per cent. dividends on the stock, considerable contributions to sinking funds, and something like $400,000 for new construction, though the renewals of the main line with steel are charged wholly to working expenses. The St. Louis, Rock Island & Chicago road, the company's last acquisition, has required large expenditures for repairs, but the result of its operation is reported to have been satisfactory. With it, however, the net earnings of the company were very little greater than in 1876. This company is perhaps the most prosperous one in the Northwest, but its good financial condition and payment of good dividends in bad times are not chiefly due to extraordinarily large earnings or even to its excellent management, which is exceptionally careful and conscientious, but very largely to its small capital account. The stock and bonds of the company now outstanding are only at the rate of about $37,500 per mile of road, though road and equipment are unexcelled in the West.

THE WINTER GRAIN MOVEMENT for five years for the 10 weeks from Dec. 1 to Feb. 9 has been:

Receipts of the eight leading Northwestern markets:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
20,064,904	21,845,504	23,438,447	15,330,096	20,237,549

Shipments of the same eight markets:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
15,942,092	9,961,293	10,397,081	7,699,871	12,886,464

Receipts of the seven Atlantic grain ports:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
32,236,494	18,398,493	17,569,293	15,125,861	19,697,714

Here is an increase, compared with last year, of 19 per cent. in the receipts and 60 per cent. in the shipments of the Northwestern markets, and of 75 per cent. in the receipts of the Atlantic ports.

THE AMERICAN INSTITUTE OF MINING ENGINEERS will hold its regular February meeting in Philadelphia, beginning Tuesday, the 26th, at 8 p. m., in the rooms of the American Philosophical Society, Fifth street, below Chestnut. Sessions will be held Wednesday morning, afternoon and evening and Thursday morning at different places in the city, at which a number of interesting papers are expected.

How "Wear" as well as Decay of Ties may be Prevented by Preservation Treatment.

The following letter, addressed to Mr. Edward R. Andrews by Mr. Clemens Herschell, Civil and Hydraulic Engineer, of No. 66 State street, Boston, has been furnished us for publication:

"In answer to your inquiry, I will repeat what I said at a recent meeting of the Boston Society of Civil Engineers, on the subject of treated and untreated railroad ties. I have been of the opinion for some 10 or 12 years, that the frequent remark that 'railroad ties will wear out (*i. e.*, cut through) before they will rot out' is an incomplete and misleading statement, as it is usually made. It supposes that treated [creosoted, kyanized, burnettized, etc.] railroad ties will wear and cut the same as untreated ones, whereas the *fact* is, as shown by the records of foreign railroads, beyond dispute, that treated ties *wear* longer, do not *cut through* so quickly, and hold the spike longer than untreated ties. I have my own explanation of the fact, but whether the same is correct or not is really a matter of no especial importance. What we are after are the facts. Still, I will give the explanation that I have arrived at, for my own satisfaction, submitting the same to criticism. It is that, after all, what we call 'cutting through,' 'wearing out,' 'refusing to hold the spike,' etc., in railroad ties, is nothing more or less than rotting, with this single distinction, that it is a local rotting, a decay in certain spots and places only, and not that of the whole body of the tie; and that, therefore, a treated tie, which resists decay better, any and everywhere, within it and on its surface, will wear longer, cut less, and hold the spike longer.

"The first time I had occasion to reason in this manner was in observing the dropping down into the ties of the cast-iron chairs of a piece of 'English' double-headed rail track on the Boston & Albany Railroad. The chairs were frequently an inch and an inch and a half imbedded in the tie, and the cup so formed was filled with water after every slight rain or heavy dew, and it seemed to me plain that this concentrated wetting and drying in that spot would not fail to rot the tie faster right under the chair than elsewhere; and adding that to the pounding action of the traffic over the road in the same spot, it made clear to me why the tie wore out before it rotted out, and at the same time satisfying me that a properly 'treated tie' would behave better under the same circumstances."

Traffic Questions Decided by the British Railway Commissioners.

The following is from the report published by the British Railway Commissioners for the year ending Aug. 31 last:

1. We, the Railway Commissioners, humbly beg to report to your Majesty our proceedings under the Regulation of Railways Act, 1873, during the year to the 31st of August last.

2. For the first half of that time we were under the necessity of exercising our jurisdiction by two only of our number. Illness prevented Mr. Macnamara from attending, and eventually a vacancy was caused by his lamented death. His successor was appointed on the 27th day of February.

3. To prevent undue preferences and to ensure the proper transmission and interchange of traffic were the two objects in view in passing the Railway and Canal Traffic Act of 1854, and it is a principal part of our duty to carry out upon demand the provisions of that act.

4. Locke and another *v.* the Northeastern Railway Company (No. 12 in Appendix) was a charge of undue preference. The Northeastern Company have a system under which they receive coal into depots at their stations, and there sell them for the proprietors by an agent of their own. The depots are only allowed to be let to owners of collieries, and owners with depots are given certain advantages which are not extended to owners to whom no depots have been allotted. As part of these, their coal was carried at a reduction of 2½ per cent. from the established rates, and they were also exempt from a charge of threepence a ton for unloading. But such advantages, it was contended, were undue preferences within the Traffic Act, and it appeared to us that it was contrary to that act that a difference should be made in the company's coal rates, whether for transport or for unloading, according as the coal was or was not intended to be deposited and sold at the stations, and we enjoined the company to desist from charging the applicants more in either respect than they charged owners of collieries who had depots.

5. The Act of 1854 was passed, as we have said, in order, first, that all persons might be able to use the railways upon equal terms as to charges and accommodation, and, secondly, that railway companies might be compellable to interchange through traffic without delay, and to convey it, as also local traffic, with reasonable facilities, such facilities including, as declared by the Act of 1873, the carrying at through rates at the request of any railway company. The Select Committee of 1872 observe in their report, p. xiii., that the applications to the Court of Common Pleas were almost all complaints of undue preference, and that the branch of the Act relating to traffic facilities had failed altogether to be applied, not because the branch did not need to be enforced as much as the other branch, but because of the difficulty of questions connected traffic arrangements. This distinction has not been observable since the passing of the Act of 1873, and of the applications that were made to us during the past year to enforce the Act of 1854 as amended, and which were ten in number, the majority were cases founded on complaints of companies not affording proper traffic facilities, meaning that the companies did not do for the traffic what was reasonable under the circumstances. Thus, in Thomas *v.* the North Staffordshire Railway Company (No. 1 in Appendix), the applicant complained that the company refused to deliver his traffic at their station at Tunstall. The answer of the company was that, except for a few articles in the mineral class, as coal and ironstone, their station for Tunstall traffic was at Longport, and a mile and a half distant, and that not professing as carriers on their railway to deliver general goods at Tunstall station they were under no legal obligation to do so. This defense assumed that the liabilities of railway companies acting as carriers did not extend beyond those of ordinary carriers, but we held that carrying companies had special obligations under the Act of 1854, and that questions as to how far a sender of goods might require delivery at any station he might appoint, or as to how far a company was liable to carry goods of every kind or for all persons alike were to be determined in each case, not with reference to what the company might choose to do or might ordinarily do, but with reference to what might be within its powers, and at the same time a reasonable requirement. In this case, as it happened, the ground occupied by the Tunstall station was not a sufficient space, and the company had no power to take additional land.

6. Traffic facilities formed the subject also of Watkinson and others *v.* the Wrexham, Mold & Connah's Quay Railway Company (No. 3 in the Appendix). The complainants had private sidings connecting their brickworks and collieries with the company's railway from Buckley to Connah's Quay, and they complained of the company charging them threepence a ton for taking wagons from the sidings to the line and returning them from the line to the sidings. A mileage at the maximum rate allowed by the special act was charged for conveyance over the railway, and conveyance, it was argued, included the necessary work of making up a train and drawing wagons from the sidings at which the train stopped. We determine that the facilities demanded of the company for receiving the traffic were no more than reasonable under the circumstances of the line, and that the service performed was covered by the mileage rates, and the extra charge, therefore, one not authorized to be taken. We also determined that as regards the Buckley Railway the company were under obligation by special act not only to carry, but also to furnish traders with wagons, and upon this point, which turned upon the construction of a statute, we afterwards, at the instance of the company, granted a case for the opinion of the Supreme Court (No. 3A. in Appendix).

7. Dundee and others *v.* Belfast & Northern Counties Railway Company raised the question of the power of a railway company to close a passenger station. Ballynure-road had been for many years a station on the Belfast & Ballymena line, but in August, 1875, it was discontinued as a station for passengers. It was still kept opened for goods, but for passenger traffic the company considered it sufficient that there was a station two and a half miles distant—the Ballyclare and Doagh station. The applicants were sufferers by the change, and they had represented to the company, though without effect, the public inconvenience of trains being no longer stopped at Ballynure-road, and their intention, if necessary, to have it determined whether they were not entitled to relief under the Traffic Act. The matter on either side was fully set out in the application and answer of the parties, but it underwent no discussion at the hearing, and we made an order by consent (April 28), "that the application should be dismissed, the defendants undertaking to reopen within one month for further trial Ballynure-road station as a passenger station for two years, with two trains each way per day; at the end of that time both the parties to be in the same position they are in now."

8. The above cases illustrate the facilities that can be claimed for local traffic, but there is also a through traffic on every line, and we shall now refer to cases which show the corresponding facilities existing for traffic in which two or more companies are concerned as carriers. The Act of 1854 requires the interests of traffic coming to a line from other lines to be as much cared for as those of local traffic. It requires that it should be made easy to go from any place on the railway of one company to any place on the railway, forming a through route, of another company, as if both railways belonged to the same company. Where, however, companies are competing, arrangements for working their lines in harmony are not unfrequently overlooked, and the provisions of the act, and ready means of enforcing them, are very necessary to prevent through traffic being impeded.

9. In the Victoria Coal & Iron Company *v.* Neath & Brecon and Midland Railway companies (No. 10 in Appendix), the applicants complained that although the Neath & Brecon Railway passed close to their colliery, and with the Swansea Vale Railway, belonging to the Midland, formed their natural and direct route to Swansea, they were prevented using that route because the Midland would not exchange traffic with the Neath & Brecon, on the plea that there were no convenient sidings at the junction, while it was contended for the Midland that a company was only liable to give facilities at the actual point of junction, and that to give facilities did not mean that it could be required to construct works, and hence that we could not enforce the act in a case where, though two main lines joined, incompleteness of works at the point of junction made that place an unfit one for exchanging traffic. But not only had "facilities" been judicially interpreted to include new works where necessary, but it was obvious also that there were many ways besides an actual transfer from sending to the forwarding company at a junction by which a company might, as to its own portion of a through route, give facilities for receiving and forwarding traffic. The Midland Company, for example, had had an offer from the Neath & Brecon to work the traffic beyond the junction, and to transfer it at any place where the Midland had accommodation. We held, therefore, that it was not giving too much scope to the act to treat cases of a want of sufficient accommodation at a junction as being quite within its provisions, but we granted the Midland Company, at their request, an appeal upon the point (No. 10A. in Appendix), stating the question of law to be "whether the cases in which a railway company is bound to afford facilities for receiving and forwarding by its railway traffic coming by another railway which forms with it a continuous line of communication, are or are not confined to cases in which in the existing state of the two railways it is reasonably possible for the former company to take over such traffic at the point of junction. At the same time we were of opinion that upon no construction of the act would the Midland have a sufficient answer to the complaint, because it was possible to exchange traffic at the junction, and their objection that this might interrupt other traffic was not a reasonable one, when the Neath & Brecon were willing either to carry past the junction or to allow the Midland, which had and exercised running powers over the Neath & Brecon Railway, to stop at the applicants' works and carry their traffic through without change. The result was that an injunction was issued, and the Midland ordered to pay the costs of the application.

10. Toomer and others *v.* London, Chatham & Dover Railway and Southeastern Railway (No. 2 in Appendix) was a complaint that the Chatham & Dover and Southeastern Railways, though forming by their conjunction at Strood one continued line of railway communication, were not allowed to be used as such, and were practically, as regards accommodation by means of them for through traffic, as separate as if a distance of a mile and a half had intervened. There were no trains in closer conjunction than at the distance of Chatham from Strood, and though there was a railway between Chatham and Strood, open and in good order, traffic was not conveyed by it, and could only be transferred by road. There were no trains that were timed so as to make a good connection; indeed, there was scarcely a train on either line which left within one hour of the arrival of a train on the other. No through tickets were issued to passengers, and senders of goods could neither invoice through via Strood in either direction, nor get any other proper accommodation for the passage of traffic. In all these repects the course pursued by the companies was contrary to the Traffic Act, and we issued an injunction directing them to discontinue it. But, independently of that act, it was also contrary to acts which concerned these particular companies individually, and in which there were clauses binding each to forward, by its own line, traffic coming from the line of the other, to book through, and, if required, to forward even without charge of carriage. We recommended last year that we should have power to enforce directly the obligations imposed on companies by their special acts, and this case showed that clauses inserted for the express object of preventing the interests of the public from suffering, may at present remain inoperative for want of ready means of seeing to their being carried out.

11. By the terms of our injunction, to mention only the points that were the more important ones, the companies were required so to arrange the running of their respective trains as to give a good thorough communication four times daily each way, the interval between the arrival at Strood and departure from Chatham, or the arrival at Chatham and departure from Strood, not to exceed half an hour, and the Chatham & Dover Company was further required to grant the public the means of traveling by train between Chatham and the Strood station of the Southeastern at least eight times each way daily. The service of trains established in April in compliance with this injunction, has been continued up to the present time. Four, at least, of the trains on each main line are now timed so as to give a good continuous communication, and the Chatham & Dover Company work local trains over their branch to Strood (Southeastern) to and from Chatham and to and from Rochester bridge, which enables the public to go by railway, and in reasonable time, between Chatham and Strood, eight times each way daily, and to exchange also into the through trains without the interruption of their journey at this point delaying them in any case more than half an hour. These local trains gave accommodation to upwards of 11,000 passengers in the first three months, and it was not therefore without cause that our interposition was invoked.

12. It was, however, the beginning of April before full effect had been given to our order dated Jan. 6, and meanwhile the parties who had obtained the issue of the order had complained to us of its not being carried into effect, and had applied to have its injunction enforced by fine and attachment. We thought more delay was occurring than there was any justification for, and on March 14 (App., No. 6) we gave the companies to the beginning of April to complete their arrangements, under penalty of a fine for every day after that date that they might fail to obey.

13. The legality of our order of Jan. 6 was afterwards called in question, by proceedings in the Exchequer Division of the High Court. The order itself was final, but it was assumed that the terms in which it was drawn up were the terms in which it was moved for, and in the opinion of the Court, as expressed by Baron Cleasby, in his judgment (June 28), an application against two companies to act jointly in what neither could do separately, as, for example, to enter into arrangements for the transferring of traffic at a station, and to make jointly a time-table for particular traffic, did not come within the Railway Traffic Act, and the Court, after observing "that it was one thing to call upon each company according to its powers to give certain facilities, and a different thing to call upon them to act jointly in any way," held that

the original application not having been in a form we could entertain, the order founded upon it ought not to be further enforced. This conclusion seems at variance with the view heretofore taken of the Act of 1854. Interchange of traffic was one of the subjects considered by the Royal Commission appointed in 1865, and they say in their report (par. 170), that the act is sufficient to insure the proper interchange of passenger traffic, citing in support of that statement the following passage from the judgment of the Court of Common Pleas, in the case of Barret *v.* Great Northern & Midland Railway companies: "it would be unreasonable to compel two companies to make arrangements with respect to their passenger traffic, unless it were made out to our satisfaction that the public convenience required it," a passage cited by them as implying that companies are amenable to the act, for matters of joint mismanagement, and can be enjoined to enter into arrangements respecting them. It was unfortunate that from the course of the proceedings in the Exchequer Division that court was not made aware of the reasons why, in our opinion, the application in question was within the act, and our order upon it sufficiently certain and definite. As far as the particular case against the Chatham & Dover and Southeastern companies was concerned, we were relieved from considering whether or not to take any further steps with regard to it, either by appeal, as suggested by the Exchequer Division, from their decision, or otherwise, by both companies of their own accord continuing the facilities our order had required of them; but for the future in cases of a similar kind we shall direct applications that may seem to be too wide as regards things requiring to be done jointly by two or more companies to be amended before the hearing, and moulded in the manner best adapted for obviating objection on that ground, and it would assist in preventing doubts arising if instead of being given powers, "as if we were a court of record," we were granted all the incidents and exemptions of a court of that title.

Transportation in Congress.

In the Senate, on the 14th Mr. Voorhees, of Indiana, submitted the following:

Resolved by the Senate, That the Committee on Judiciary be, and the same is, hereby instructed to ascertain at its earliest convenience whether or not the railroad companies referred to by the acts of the XXXIXth Congress, approved respectively July 25,26 and 27, 1866, and entitled respectively, "An act granting lands to the State of Kansas to aid in the construction of the Kansas & Neosho Valley Railroad, and its extension to Red River;" "An act granting lands to the State of Kansas to aid in the construction of a southern branch of the Union Pacific Railroad and telegraph line from Fort Riley, Kansas, to Fort Smith, Arkansas," and "An act granting land to aid in the construction of a railroad and telegraph line from the States of Missouri and Arkansas to the Pacific coast," have issued bonds of any kind predicated upon the conditional land grants of the lands of the Indians of the Indian Territory claimed by said companies under said acts. If it be ascertained that such bonds have been issued, then it shall be the duty of said committee to ascertain in whose possession the bonds are, and for what purpose.

Resolved further, That said committee, in the discharge of its duties aforesaid, be authorized to call for persons and papers, and when necessary to compel the attendance of witnesses in its investigations, and to report the result of said investigations to this body during the present session of Congress.

Laid over at the suggestion of Mr. Ingalls, of Kansas.

In the House on the 18th Mr. Corbett, of Wyoming, introduced a bill to incorporate the National Pacific Railroad Company.

Mr. Garfield, of Ohio, introduced a bill to provide for the more thorough investigation of railroad accidents, doubtless the same as that introduced by him in the last Congress, and which then failed to reach a vote.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Northern Central, annual meeting, at the general office in Baltimore, Feb. 28, at 1 p. m.

Central Mississippi, annual meeting, at the office, No. 226 Charles street, New Orleans, March 4, at noon.

New Orleans, Jackson & Northern, annual meeting, at the office, No. 226 Charles street, New Orleans, March 6, at noon.

Pennsylvania, annual meeting, at Musical Fund Hall, Philadelphia, March 12, at 10 a. m.

Chicago, Burlington & Quincy, annual meeting, in Chicago, Feb. 27.

Lehigh Coal & Navigation, annual meeting, at the Board of Trade rooms, Philadelphia, Feb. 26, at 11 a. m.

Dividends.

Dividends will be paid as follows:

Chicago & Alton, 3½ per cent., semi-annual, payable March 4. Transfer books will be closed from Feb. 21 to March 5.

Illinois Central, 3 per cent., semi-annual, payable March 1.

Foreclosure Sales.

The *Danville, Hazleton & Wilkesbarre* road will be sold at public sale under foreclosure of mortgage at Bloomsburg, Pa., March 20. The terms of sale are $10,000 in cash and the balance within ten days, but bonds and over-due coupons will be accepted for their *pro rata* value for all except the $10,000 first payment. The road extends from Sunbury, Pa., to Tomhicken, 43½ miles. By the last report the funded debt consisted of $1,400,000 first and $47,000 second-mortgage bonds. The road is leased to the Pennsylvania Railroad Company.

New England Association of Railroad Superintendents.

At the regular meeting in Boston, Feb. 14, a plan for a clearing house for the settlement of all matters relating to the exchange of freight cars and the settlement of balances was presented. After some discussion it was referred to a special committee, of which General Manager Bliss of the Boston & Albany, is chairman.

ELECTIONS AND APPOINTMENTS.

Avon, Geneseo & Mount Morris.—At the annual meeting in Mount Morris, N. Y., Feb. 12, the following directors were chosen: M F. Reynolds, Willis Phelps, H. P. Mills, H. E. Brown, D. H. Fitzhugh, William A. Fitzhugh, William A. Wadsworth, George Ellwanger, William Mudgett, George W. Phelps, H. J. Jewett, Amos Bronson, H. E. Fiske. The board elected M. F. Reynolds, President. The road is leased to the Erie.

Boston & Albany.—The Massachusetts Legislature has elected the following State directors in this company: Thomas Talbot, Billerica; C. L. Wood, New Bedford; J. L. Chadwick, Boston. There is no change from last year.

Cincinnati Southern.—Mr. A. H. Bugher has been appointed a member of the board of trustees, in place of John Schiff, deceased.

Connecticut Railroad Commission.—Mr. John W. Bacon, of Danbury, has been nominated by the Governor of Connecticut and confirmed by the Senate as Railroad Commissioner. He has been a member of the board for several months, having been appointed to fill the vacancy caused by the death of Minott A. Osborn. Mr. Bacon is an engineer, and was for some time Superintendent of the Danbury & Norwalk road.

Davenport & Northwestern.—Mr. H. E. Woods has been appointed Master Mechanic. He has been for a long time on the Chicago, Rock Island & Pacific.

Delaware, Lackawanna & Western.—At the annual meeting in New York Feb. 19, the following directors were chosen: Samuel Sloan, Wm. E. Dodge, Moses Taylor, George Bliss, Percy R. Pyne, Wilson G. Hunt, Benjamin G. Clarke, E. W. Holbrook, New York; George Bulkley, Southport, Conn.; Simeon B. Chittenden, Brooklyn, N. Y.; John Brisbin, A. L. Dennis, Newark, N. J.; Wm. Walter Phelps, Teaneck, N. J.; William Ryle, Paterson, N. J.; John I. Blair, Blairstown, N. J. Messrs. Ryle and Holbrook are new directors, succeeding James Blair and Marcellus Massey. The board elected Samuel Sloan, President; Frederick F. Chambers, Secretary; Frederick H. Gibbens, Treasurer. Mr. Chambers, formerly Auditor, becomes Secretary in place of Mr. Andrew J. Odell, who retires on account of ill health.

Dominion Telegraph.—At the annual meeting in Toronto, Ont., Feb. 13, the following directors were chosen: T. N. Gibbs, John J. Mackenzie, James Michie, Thomas Swinyard, Wm. Cayley, Frank Smith, John C. Smith, Anthony Copp, R. N. Waddell. The board elected Hon. T. N. Gibbs President; John J. Mackenzie, Vice-President; James Michie, Treasurer; Thomas Swinyard, Managing Director.

Duluth & Winnipeg.—The officers of this new company are as follows: W. W. Spalding, President; John C. Hunter, Vice President; H. M. Peyton, Treasurer; James Bardon, Secretary. Offices at Duluth, Minnesota.

Fort Wayne, Jackson & Saginaw.—At the annual meeting in Jackson, Mich., Feb. 12, the following directors were chosen: P. B. Loomis, D. Merriam, W. R. Reynolds, H. H. Smith, W. D. Thompson, E. A. Webster, Jackson, Mich.; E. O. Grosvenor, Jonesville, Mich.; J. A. Woodhull, Angola, Ind.; C. A. O. McClellan, Waterloo, Ind.; John H. Bass, John H. Clark, A. P. Edgerton, O. P. Morgan, Fort Wayne, Ind. The board re-elected P. B. Loomis, President and General Manager; E. O. Grosvenor, Vice-President; E. Pringle, Secretary; B. S. Chapin, Treasurer.

Georgia.—Col. E. W. Cole has been chosen a director in place of Frank H. Miller, resigned.

Levis & Kennebec.—At the annual meeting in Levis, P. Q., Feb. 5, the following directors were chosen: Z. Andet, E. Baudet, Michael Cahill, C. W. Carrier, L. P. Demers, F. X. Dulac, G. N. A. Fortier, F. X. Lemieux, G. O. Taschereau.

Lowell & Andover.—The following officers have been elected for the ensuing year: President, Frederick Ayer; Clerk and Treasurer, Benjamin Walker. The road is leased to the Boston & Maine.

New York Central & Hudson River.—Mr. Richard Donaby has been appointed Master Car Builder at Niagara Falls, N. Y., in place of George Rowe, deceased.

Pennsylvania Canal.—At the annual meeting in Philadelphia, Feb. 12, the following were chosen: President, Isaac J. Wistar; directors, Thomas A. Scott, G. B. Roberts, Wistar Morris, Josiah Bacon, Wm. Anspach, M. H. Stanton, John P. Steiner, S. M. Felton, A. J. Cassatt, Strickland Kneass, Alexander Biddle.

Pittsfield & North Adams.—At the annual meeting, Feb. 13, the following directors were chosen: Chester W. Chapin, F. H. Bradlee, Edward Jackson, F. H. Appleton, Ignatius Sargent, Jr. The road is leased to the Boston & Albany.

Schuylkill Navigation.—At the annual meeting in Philadelphia, Feb. 12, the following were chosen: President, Frederick Fraley; managers, J. N. Hutchinson, C. W. Wharton, G. Brooke, C. Baber, M. Ward, T. R. Patton; Secretary and Treasurer, Richard Wilkins.

Southwestern, of Georgia.—At the annual meeting in Macon, Ga., last week, the following directors were chosen: Wm. S. Holt, J. E. Jones, Virgil Powers, Dr. J. S. Baxter, T. B. Gresham, Macon, Ga.; J. L. Mustian, Merriwether County, Ga.; W. M. Wadley, A. R. Lawton, Savannah, Ga. The board re-elected Gen. Wm. S. Holt President; John F. Boisfeuillet, Secretary and Treasurer. The road is leased to the Central of Georgia.

Summit Branch.—At the annual meeting in Philadelphia, Feb. 12, the following directors were chosen: Thomas A. Scott, G. B. Roberts, A. J. Cassatt, Wistar Morris, Strickland Kneass, J. P. Jones, N. P. Shortridge, Thomas J. Lee, W. T. Hart, George Snell.

Tampa, Pease Creek & St. Johns River.—This new Florida company was organized Jan. 25 by the election of the following directors: John T. Lesley, John B. Wall, William B. Henderson, W. T. Carpenter, W. V. Varn, Philip Collins, H. R. Benjamin, H. L. Crane, E. A. Clarke, J. G. Knapp, W. C. Brown. The board elected John T. Lesley, President; John B. Wall, Vice-President; W. C. Brown, Secretary; William B. Henderson, Treasurer. The company's headquarters are at Hillsborough, Fla.

United New Jersey.—The New Jersey Legislature has re-elected Mr. William Patterson, of Perth Amboy, State Director of this company.

Wabash.—At the annual meeting in Toledo, Feb. 20, the following directors were chosen: James A. Roosevelt, Cyrus W. Field, Walter J. Gurnee, H. A. V. Post, Solon Humphreys, M. K. Jesup, W. M. Bliss, E. H. R. Lyman, New York; W. Colburn, A. L. Hopkins, Toledo, O.; James Cheney, Fort Wayne, Ind.; C. Ridgely, Springfield, Ill.; L. H. Loftin, St. Louis. This is substantially the old board.

West Jersey.—At the annual meeting in Camden, N. J., Feb. 12, the old board was re-elected, as follows: Coleman F. Leaming, Cape May Court House, N. J.; Lewis Mulford, Millville, N. J.; John M. Moore, Clayton, N. J.; Charles E. Elmer, Thomas Jones Yorke, Salem, N. J.; Alexander G. Cattell, Thomas H. Dudley, Camden, N. J.; Josiah Bacon, J. N. DuBarry, Strickland Kneass, George B. Roberts, N. P. Shortridge, George Wood, Philadelphia. The board re-elected George B. Roberts, President; Dr. W. Taylor, Secretary and Treasurer; Frank Thompson, General Manager; Gen. W. J. Sewell, Superintendent.

TRAFFIC AND EARNINGS.

East-Bound Freight Rates.

A dispatch from Chicago, Feb. 20, says: "The movement for the restoration of the tariff rates to the seaboard appears to have been entirely suspended. The volume of traffic going forward is equal to the carrying capacity of all the roads. Open rates were quoted to-day at 20 cents to New York, 18 to Philadelphia, and 17 to Baltimore. There is a considerable scramble for freight, each line receiving all it can conveniently take care of."

Railroad Earnings.

Earnings for various periods are reported as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Year ending Dec. 31:				
Chi., Bur. & Q....	$12,551,454	$12,003,950	Inc..	$547,504 4.6
Expenses.....	7,178,313	6,814,000	Inc..	364,313 5.3
Net earnings...	$5,373,141	$5,189,950	Inc..	$183,191 3.5
Earn. per mile.	9,346	8,969	Inc..	377 4.2
P. c. of exp'nses	57.20	56.78	Inc..	0.42 0.7
Det., Lans. & N..	788,561	743,088	Inc..	45,473 6.1
Expenses	502,055	531,755	Dec..	29,700 5.6
Net earnings...	$286,506	$211,333	Inc..	$75,173 35.6
Earn. per mile.	4,333	4,083	Inc..	250 6.1
P. c. of exp'nses	63.63	71.60	Dec..	7.97 11.1
Ft. Wayne, Jackson & Saginaw.	254,335	268,041	Dec..	13,706 5.1
Earn. per mile.	2,543	2,680	Dec..	137 5.1
Ill. Central.....	6,683,322	7,090,689	Dec..	407,367 5.7
Expenses.....	3,122,443	3,845,643	Dec.	723,200 18.8
Net earnings...	$3,560,879	$3,245,046	Inc..	$315,833 9.7
Earn. per mile..	6,034	6,401	Dec.	367 5.7
P. c. of exp'nses	46.72	54.23	Dec.	7.51 13.8
United N. Jersey.	8,064,128	10,941,581	Dec.	2,877,453 26.3
Expenses.....	5,750,095	6,226,810	Dec.	476,715 7.7
Net earnings...	$2,314,033	$4,714,771	Dec.	$2,400,738 50.9
Earn. per mile.	27,401	37,178	Dec.	9,777 26.3
P. c. of exp'nses	71.31	56.91	Inc..	14.40 25.3
West Jersey.....	595,025	731,011	Dec.	135,986 18.6
Expenses.....	391,430	463,375	Dec.	71,945 15.5
Net earnings...	$203,595	$267,636	Dec.	$64,041 23.9
Earn. per mile.	4,043	5,704	Dec.	1,061 18.6
P. c. of exp'nses	65.79	63.39	Inc..	2.40 3.8
Wabash.....	4,585,914	4,567,286	Inc..	18,628 0.4
Expenses.....	3,329,801	3,732,001	Dec.	402,200 10.8
Net earnings...	$1,256,113	$835,285	Inc..	$420,828 50.4
Earn. per mile..	7,302	7,273	Inc..	29 0.4
P. c. of exp'nses	72.61	81.72	Dec.	9.11 11.1
Month of November:				
Erie.....	$1,570,943	$1,396,866	Inc..	$174,077 12.5
Net earnings...	608,354	394,461	Inc..	213,893 54.2
P. c. of exp'nses	61.27	71.75	Dec.	10.48 14.6
Month of January:	1878.	1877.		
Dakota Southern.	$14,534	$8,497	Inc..	$6,037 71.0
Det., Lans. & N..	56,963	45,602	Inc..	11,361 24.9
Hannibal & St. J.	115,160	115,332	Dec.	172 0.1
Ind., Bloom. & W.	120,318	92,168	Inc..	28,150 30.5
International & Gt. Northern...	134,884	174,013	Dec.	29,129 16.7
Louis. & Nash....	490,000	445,768	Inc..	44,232 9.9
Net earnings...	210,000	169,891	Inc..	40,109 23.6
P. c. of exp'nses	57.14	61.86	Dec.	4.72 7.6
St. Jo. & West...	45,802	28,280	Inc..	17,522 61.9
St. Louis & Southeastern.....	85,134	90,122	Dec.	4,988 5.5
First week in February:				
Denver & Rio G..	$14,164	$9,478	Inc..	$4,686 49.3
Week ending Feb. 8:				
Great Western, of Canada.....	$95,904	$76,682	Inc..	$19,222 25.1
Week ending Feb. 9:				
Grand Trunk.....	$201,372	$182,456	Inc..	$18,916 10.4

Grain Movement.

Receipts and shipments of grain of all kinds for the week ending Feb. 9, were, in bushels:

	1878.	1877.	Increase.	P. c.
Northwestern rec'ts..	2,699,954	1,477,302	1,222,652	82.7
" shipments	2,405,538	970,548	1,434,990	147.9
Atlantic receipts.....	3,680,912	1,975,509	1,705,403	86.3

The receipts at the Northwestern ports are no longer so enormous as they were for a few weeks in January; their shipments remain very heavy for the season; the receipts at Atlantic ports are a trifle less than for the week before, but have been equaled only then in any previous winter week. The distribution of these latter receipts is notable for the exceptionally large receipts at New Orleans, which were nearly twice as great as for any previous week for more than a year, and more than the average weekly receipts of Baltimore or Philadelphia this winter. The proportions of the total received at the several ports this year were: New York, 40.5 per cent.; New Orleans, 20.0; Philadelphia, 16.6; Baltimore, 14.0; Boston, 5.6; Portland, 3.2; Montreal, 0.1.

Coal Movement.

Coal tonnages for the week ending Feb. 9 are reported as follows:

	1878.	1877.	Decrease.	P. c.
Anthracite	229,111	273,361	44,250	16.2
Semi-bituminous	31,797	.....	.....	....
Bituminous, Pennsylvania.....	36,711	.....	.....	....

The following are bituminous and semi-bituminous tonnages not heretofore reported for the month of January, 1878:

	Tons.
East Broad Top.....	7,385
Bellefonte & Snow Shoe.....	3,163
Allegheny Region, Pa. R. R.	15,915
Penn. and Westmoreland.....	71,538
West Pennsylvania, R. R.....	18,318
Southwest Pennsylvania R. R.....	3,238
Pittsburgh Region, Pa. R. R.....	30,389
Total.....	149,946

The coal tonnage of the Pennsylvania Railroad for January was as follows:

	1878.	1877.	Decrease.	P. c.
Anthracite.....	43,906	57,873	13,967	24.1
Semi-bituminous.....	98,291	128,593	30,302	23.6
Bituminous.....	139,398	164,329	24,931	15.2
Coke.....	83,858	86,259	2,401	2.8
Totals.....	365,453	437,054	71,601	16.4

West-Bound Freight Rates.

The new rates on west-bound business took effect Feb. 15. They are as follows, per 100 pounds:

To Chicago, from	1st class. cents.	2d class. cents.	3d class. cents.	4th class. cents.
New York and Boston	75	60	50	40
Philadelphia.....	69	54	48	38
Baltimore.....	67	52	47	37
To St. Louis, from				
New York and Boston.....	96	78	66	54
Philadelphia.....	90	72	64	52
Baltimore.....	88	70	63	51

The differences are the same as heretofore. Out of Boston, for the present, pending Mr. Fink's arbitration, the Vermont Central and Grand Trunk route is to take freight at the same differences as before the reduction, that is 10 per cent. of the old rates—not the new ones. This makes the Grand Trunk rates, from Boston to Chicago, in cents:

	Class.			
	1.	2.	3.	4.
To Chicago.....	65	52	44	36

New Orleans Grain Exports.

The following statement of the grain exports of New Orleans for the past two years, month by month, are published:

EXPORTS OF GRAIN FROM NEW ORLEANS, 1876-77.

	—Corn in Bulk—		—Corn in Sacks—	
	1876.	1877.	1876.	1877.
January	38,608	34,534	10,167	20,008
February	212,632	205,074	78,634	30,312
March	304,471	366,319	51,079	73,324
April	219,722	394,932	64,611	85,011
May	61,962	505,275	65,803	104,000
June	256,957	252,273	49,426	46,063
July	110,070	141,633	39,716	18,274
August	35,602	119,041	16,790	10,806
September	39,322	146,297	21,961	25,828
October	107,647	272,502	26,374	9,890
November	111,508	483,607	33,776	8,055
December	191,732	444,968	35,130	15,062
Total	1,690,393	3,366,455	543,467	444,357

	—Wheat—	
	1876.	1877.
January	.....	.....
February	.....	.....
March	.....	875
April	.....	.....
May	.....	.....
June	.....	.....
July	6,000	3,715
August	6,477	37,834
September	43,012	19,030
October	36,265	5,326
November	24,000	15,285
December	16,517	136,784
Total	142,371	218,848

This gives the following totals:

	1877.	1876.	Increase.	P. c.
Corn	3,810,812	2,233,860	1,576,952	70.5
Wheat	218,848	142,371	76,477	53.9
Total	4,029,660	2,376,231	1,653,429	69.6

The exports of 1876 were nearly 2½ per cent. of the total exports of the United States; those of 1877 about 4 per cent.

THE SCRAP HEAP.

Railroad Manufactures.

The Smith Bridge Co., at Toledo, O., is building one iron and six Howe truss bridges for the Springfield, Jackson & Pomeroy road.

At the recent annual meeting of the Eames Vacuum Brake Co., in Watertown, N. Y., the following officers were elected: F. W. Eames, President and Superintendent; R. E. Ricker, Vice-President; C. D. Bingham, Secretary and Treasurer.

Out of 22 furnaces formerly in blast on the lower Cumberland River in Kentucky and Tennessee, 18 have been abandoned and only four are now in operation.

At the Altoona shops of the Pennsylvania Railroad orders have been given to build five new postal cars and ten new engines of the "Modoc" or consolidation pattern.

J. B. & W. W. Cornell, of New York, have the contract for the station buildings of the Gilbert Elevated Railroad. These buildings will be uniform in style, 46 by 22 feet in size, with platforms 126 feet long. They will be chiefly of iron.

A valuable deposit of brown hematite iron ore has been discovered near the Hiwassee River in East Tennessee. The ore is to be carried by a gravity road three miles long to the river, where it can be shipped by boat to Chattanooga.

The Novelty Iron Works at Cleveland, O., have contracts for some bridge work in Iowa and for a lighthouse near Cleveland. They have just finished the iron work for a new building for the Youngstown Rolling Mill Co.

The Ohio Valley Rolling Mill, at Moundsville, W. Va., is in full operation.

Mr. Calvin Wells, of Hussey, Wells & Co., has been chosen President of the Pittsburgh Forge & Iron Co.

Neshannock Furnace, at New Castle, Pa., in the four weeks ending Feb. 2 turned out 1,767 tons of marketable pig iron. The furnace is 16 feet bosh.

L. B. Flanders, of Philadelphia, has recently shipped to South America a number of special tools for use in a railroad repair shop.

The charcoal furnace of the Maidencreek Iron Works, at Lenhartsville, Pa., is to go into blast soon.

The Edgar Thomson Steel Works, near Pittsburgh, have orders enough on hand to keep their rail mill busy until October.

The Chattanooga (Tenn.) mills report orders for iron rails very light at present.

The Rising Fawn Iron Co., which owns a blast furnace and mines in Dade County, Ga., has been placed in the hands of a receiver, on application of the bondholders.

M. M. Buck & Co., of St. Louis, have recently built three of their inspection cars or steam hand-cars, as they might be called, one for the Chicago, Burlington & Quincy, one for the St. Louis & Southeastern and one for the Honduras Railway in Central America.

Fairbanks & Co., of St. Johnsbury, Vt., have recently put up in the New York Central & Hudson River stock yards at East Buffalo, N. Y., a set of platform scales of 60 tons capacity. They are arranged to weigh a full car-load of stock at a time.

The Harlan & Hollingsworth Co., of Wilmington, Del., recently delivered four new passenger coaches to the Scioto Valley Railroad.

A meeting of the creditors of the Hinkley Locomotive Works was to be held at the office in Boston Feb. 21, to hear the report of the committee appointed at the previous meeting.

The Hamilton Rubber Co., at Trenton, N. J., is full of work, having more orders on hand than ever before.

The Baldwin Locomotive Works have nearly completed the freight engines they are building for Russia, and two steamers are now at Philadelphia, loading up with the engines.

The Rhode Island Locomotive Works at Providence are building a 15-ton passenger engine for the Worcester & Shrewsbury road.

The Aurora (Ill.) *Beacon* gives the following summary of the work done in the Chicago, Burlington & Quincy shops in 1877: "Number of locomotives having had light repairs, 188; heavy repairs, 125; rebuilt, 23; new boilers, 20; new fire-boxes, 65; new smoke stacks, 93; new tender frames, 76; new sets flues, 39; new sets steel tire, 66; new cabs, 54; new driving wheels, 60; new truck wheels, 2,351; number of engines painted, 189."

Engineers' Club of Philadelphia.

At the last meeting of this society eleven new members were elected. Mr. J. F. Robinson read a paper on "Steam Motors and Cars for Street Railways," in which he gave an interesting account of their manufacture, giving dimensions, weight, tractive power, etc. Steam cars with 7 feet wheel base, as at present built at the Baldwin Locomotive Works, have been successfully used on roads having curves as short as 25 feet radius and grades as high as 369 feet to the mile. Mr. Robinson also stated that the comparative expense of operating roads by horses or steam had been proved to be greatly in favor of steam cars. Mr. Geo. Buchanan, Jr., read a short paper on the "Shaw Flexible Shafting." The largest sized shafting at present manufactured is 1¼ inches in diameter, and is capable of transmitting a power of 69,000 pounds or more than 2 horse power. Mr. Chas. A. Ashburner read brief articles on the "South Street Bridge," "The Metric System" and "The Jetty Question." The papers were illustrated by models, photographs and working drawings.

Getting Even with the Railroad.

For some time past the Chicago, Burlington & Quincy Railroad Company have been greatly annoyed by some person placing obstructions on their track near Creston, in Union County; telegraph poles were frequently cut down at night, and again their wires would be severed. At one time the ropes used on a derrick were half cut in two, thereby imperiling the lives of the employes engaged in hoisting rock and heavy bridge material. In one instance the obstructions placed upon the track caused the ditching of an engine, and the company determined to ferret out the guilty party, and they put their detective, Maj. Wood, of Ottumwa, on his track. The Major went to work systematically, and last Sunday night, with a party of reliable assistants picketed the road in the vicinity. The night was scarcely half gone before a fellow was caught cutting down a telegraph pole, and they at once proceeded to arrest him.

The contest was a sharp one for a few minutes as the guilty party used the ax freely in resisting capture, but he was finally overpowered by numbers and compelled to surrender. In addition to the ax he had with him a cold chisel and hammer which he probably intended to use to cut the wire. He also had a bundle of matches, and the supposition is that he contemplated burning a bridge.

The party arrested turns out to be a farmer named Ephriam Day, living near the track, and about one mile and a half east of Creston. It appears that he had two horses killed by the cars some time last summer at a public crossing, and as the company is not liable for stock killed on the crossing, Day concluded to take the matter in his own hands, and commenced depredations detailed above. After his arrest he was taken to Creston, and made a full confession, so we are reliably informed, of almost all the depredations that had been committed, which included some misdeeds that had not been charged to his account.—*Council Bluffs (Ia.) Nonpareil.*

Danger of Speed on Railroads.

A German investigator, after having studied the accidents of different kinds by different trains, for which the Prussian statistics give some facilities, concludes the danger of injury to persons increases as the *square* of the speed, and the danger of injuries to the track and rolling stock as the *cube* of the speed.

Picking up a Coal Shed.

Well, we started back, an' I don't suppose *you* ever noticed, but *I* have, often, w'ot a nofful diff'rence thair is in conductors about "pickin' up;" some 'll go by stations where thair's sure to be five or six empty cars and never see 'em, an' others 'ill go huntin' 'round stations where they don't never unload a car onst a year—jist as if they expected to pick up any god's quantity of empties.

Well, our conductor always stopped to all of them places; so, of course, he hauled up at Chester, an' by this time the snow had got perty deep, I tell yer; but he didn't seem to mind, and bein' a little hard of seein' got way off ahind the depot where thair haint any tracks, and perty soon he sung out: "Here, boys; fetch a chain; here's a empty grain line car with the drawhead out!" So I said to Catdagger, says I, "You let the ingine acrost and I'll take a chain." So down in the locker I went and tugged and sweat and got a chain an' backed it. Then I waded an' clum through the snow 'way over behint the depot. "Where's that air car?" says I. "Here," says he; "can't you see anything?" and w'at do you think? I'll be consarned if it wasn't a coal shed! Yes, sir; a coal shed, with a sign on it "Clark & Co." An' the old man bein' not very good of seein', and in the snow too, thought it said: "Grain Line."

Good Lord! how old Joe did tear, an' Catdagger 'll swear yet if you say grain line to him.—*Port Jervis Gazette.*

Truthfulness in the Management Necessary to Security in Operation.

In Weber's German work on Safety in Railroad Working, a little book of extraordinary value and suggestiveness, the author says: "A broken word, an act of shameless nepotism an evident injustice, a systematic deceit, as has been said many times, may injure the safety of a road more than a little greater or less stability of the rails, or some other technical defect."

Transportation of Explosives.

Mr. Ned C. Farrell, late General Manager of the Costa Rica Railroad, and now of Waldo, Fla., writes us as follows, with reference to an article on the above subject published in these columns last December:

"When I was engaged in the construction of the Costa Rico Railroad we had a quantity of 'dynamite' brought from California, and after leaving the vessel *it was carted over a stony road nearly* 100 *miles.* It was put up in ¾ in. diameter packages, and packed in boxes of about 20 lbs. *No accident of any kind ever attended its use or the handling or transportation of it.* It was handled among other freight by the Costa Rica cartmen, they not knowing but what it was candles, and *no care* was taken more than *any other box of same size would receive.* As to 'congealing,' the temperature where it was handled and used never falls to 50° and seldom below 65°. I have been annoyed here in trying to get a small quantity to blast stumps in our canal right of way, and can so far get no one to say they can ship it. I do not write this for publication, but give you the facts, and they are not second-hand, as I handled personally a large quantity of the 'dynamite' and used it myself in the instruction of green men in blasting rock, in cuts of 30 to 75 feet deep. We never had any accident with it *and we had plenty with powder.*"

Long Run Without Repairs.

The Port Jervis (N. Y.) *Gazette* says: "John Kinsila, engineer of 321, running trains three and six between this station and Susquehanna, has been compelled to place his engine in the shop, owing to damage incurred by running into the freight train at Cochecton some days ago. (No blame, however, was attached to Kinsila.) The 321 has run the large number of 88,800 miles without being repaired in the least, except the ordinary "running repairs," such as reducing brasses in side and main rods, and so forth. This feat is unparalelled by any engine ever run upon the Erie, and we doubt if any engine in the United States has run the same number of miles, drawing the same weight of train—which during the Centennial season was immense—without repairs."

Notes.

A solemn joke was perpetrated in the Massachusetts Legislature the other day. The matter under consideration being the application of the Boston & Poughkeepsie Company for State aid, Mr. King, of Boston, arose and gravely moved an order as to the expediency of giving the the company the State stock in the New York & New England Company. Whereupon the order was duly referred to a committee. The true inwardness of the joke will be appreciated by many New England railroad men.

The Paris *Journal Officiel* tells its readers among the American news that a terrible railroad accident has happened at "Moodey-Schankey, a town in the Province of Connecticut." It takes some study to identify this with the Tariffville bridge accident.

An express train on the Wabash road one day last week started from Toledo and ran to Wabash without a single passenger on board. It is the first instance of the kind on record and was caused by a delay of the connecting train on the Lake Shore road.

RAILROAD LAW.

Illegal Garnishee Processes for Railroad Wages.

In some cases railroad companies have paid moneys upon illegal garnishee processes, not taking pains to ascertain whether the processes by which the creditor thus attempts to collect have been taken in a manner strictly legal. The Supreme Court of Illinois decides that it is the business of the company to give its employes all due legal protection, and says:

"It is a very easy matter, attended with no trouble or expense, to make the inquiry of every one, when employed, if he has a family and residing with it, and to enter on the payroll the word 'family.' We are inclined to think a railroad company should take an interest in the well-being of its employes, and concede to them and obtain for them all the advantages the law gives them. They are generally poor men, not well informed of their rights, and it would not be in derogation of the higher position occupied by the corporation to save and protect their interests in all cases, especially when it can be done without trouble and expense to the corporation. Such a disposition, when manifested, cannot fail to render the relations existing between employer and employe more agreeable and, perhaps, more profitable, and this in all cases of employer and employe."

New Jersey Railroad Legislation.

The New Jersey Legislature has passed an amendment to the general railroad law, which is intended to prevent the formation of "wild-cat" companies, which do not really intend to build their projected lines. It requires every new company to deposit with the Secretary of State the sum of $2,000 per mile of road, which is to be returned as each mile of road is completed.

Another law passed authorizes companies whose property is in Chancery to execute new mortgages and make agreements for the issue of bonds. The bill is general in its terms, but is intended to cover the proposed reorganization of the New Jersey Central.

Liability of Carriers over Connecting Lines.

A dispatch from Washington, Feb. 18, says: "The United States Supreme Court to-day affirmed the decision of the Circuit Court for the district of Missouri, which held that the Ohio & Mississippi Railroad Company having contracted to forward cattle from East St. Louis to Philadelphia, it is responsible for the transportation over the whole route as well on the tracks of other companies as upon its own; that railroad companies, unless forbidden to do so by their charters, have the power to contract for shipments the entire distance freight is to be carried over connecting lines."

OLD AND NEW ROADS.

Atlantic, Mississippi & Ohio.—The English bondholder have appointed Mr. H. A. V. Post, of the firm of Perkins, Livingston, Post & Co., of New York, their representative in this country. Mr. Perkins, one of the Receivers, is a member of the same firm.

It is reported that negotiations are in progress for a lease of the road, when the company is reorganized, to the East Tennessee, Virginia & Georgia Company, which would then control a line from Norfolk to Memphis, 960 miles long. These reports have been current for some time, and it is probable that such an arrangement is under consideration. It cannot be completed, however, until the Atlantic, Mississippi & Ohio is reorganized.

Blue Ridge.—A proposition is before the South Carolina Legislature to secure the completion of this road. The plan is to use the convict labor of the State on the grading, or to offer that labor free of charge to any company which will agree to complete the road within four years. The bill is strongly urged, and it is thought that it will pass.

Boston, Clinton, Fitchburg & New Bedford.—It is stated that an arrangement has been concluded with some of the largest floating debt creditors, by which $1,750,000 of the company's outstanding notes have been surrendered in exchange for an equal amount of its new preferred stock. This relieves the company of its most pressing embarrassments.

Boston, Hoosac Tunnel & Western.—This company has petitioned the Massachusetts Legislature for authority to use the Southern Vermont road, which is that section of the Troy & Greenfield passing through the southwest corner of Vermont. The company offers to pay a fair proportion of the rental now paid by the Troy & Boston Company, or to build a second track, both tracks to be used jointly with that company. The Troy & Boston holds the road under a lease made before the purchase of the Troy & Greenfield by the State, and claims to have absolute control of the property as long as it pays the rent.

Cape Girardeau & State Line.—At a meeting of the board held in Cape Girardeau, Mo., Feb. 5, President P. R. Van Frank reported that, in the case of this company against the Illinois, Missouri & Texas Railway Company and others, a final decree had been obtained at the late term of the Circuit court, declaring null and void, so far as this company and its property is concerned, the mortgage deed, by virtue of which it was claimed that the property of this company was held for the payment of the bonds issued by the Illinois, Missouri & Texas Company, and that the company is consequently now in position to negotiate and make arrangements for the completion of the road.

The board, after making the necessary orders for the present care of the property and passing a vote of thanks to the President and Counsel for their conduct of the suit, resolved to call in at once all unpaid subscriptions to the stock.

The suit above mentioned arose from a transfer of the incomplete road to the Illinois, Missouri & Texas Company, which agreed to complete the road, but afterward failed to comply with the conditions of the transfer.

Central Branch, Union Pacific.—This company has recently ordered two new locomotives, two passenger coaches and 100 freight cars to meet the increase of business from the extension of its road. The older part of the road is to be reballasted and otherwise improved, and the work will be begun as soon as the weather permits.

Central, of New Jersey.—The locomotive engineers on this road are reported to be withdrawing from the Brotherhood in considerable numbers, many of them having, it is said, signed an agreement to that effect. The officers of the road are believed to approve the movement, but no order affecting the Brotherhood has been issued and no official action taken with respect to the paper circulated among the engineers.

Cleveland, Mount Vernon & Delaware.—Arrangements are being made to change the gauge of this road from 4 ft. 10 in. to 4 ft. 9 in., which is now the standard guage of all the Pennsylvania Company's roads.

Cleveland Southern.—A company by this name has been organized to build a railroad from Cleveland, O., southward by way of Berea, Liverpool and Medina to Wooster, and thence down the valleys of the Killbuck, Walhonding and Muskingum to Zanesville, and from that place by Moxahala and Athens to Pomeroy on the Ohio River. The distance from Cleveland to Pomeroy by the proposed route is 204 miles. It is intended to make the road a narrow-gauge, and to build several branches to serve coal and iron mining districts.

Detroit & Milwaukee.—Receiver Trowbridge reports for January as follows:

Balance, Jan. 1		$63,403.36
Receipts from all sources		99,178.32
Total		$162,581.68
Pay-rolls, vouchers, etc.	$76,184.15	
Interest coupons	4,235.00	
Receiver's notes paid	15,000.00	
		95,419.15
Balance, Feb. 1		$67,162.53

The Receiver's indebtedness now amounts to $343,598.70, of which $293,598.70 is in certificates of indebtedness, and $50,000 in notes.

Duluth & Winnipeg.—This company has been organized at Duluth, Minn., to build a railroad from that city in a northwesterly direction to the northern boundary line of Minnesota between Red River and the Lake of the Woods; it being expected that the Canadians will build between the point of intersection on the boundary and the city of Winnipeg. The distance from the head of Lake Superior to the northern boundary, through Minnesota soil, is 225 miles; thence to Winnipeg, through Canadian territory, 65 miles; in all 290 miles. The object is to secure to Duluth the trade of Manitoba, it being claimed that this will be much the shortest line from Winnipeg to Lake Superior.

Erie.—Attorney-General Schoonmaker, of New York, has so far reversed the action of his predecessor as to decide that he will not require a re-accounting from Receiver Jewett, unless he can be convinced that it is necessary in the interest of justice. He requires proof by affidavit as to the purpose for which a re-accounting is sought; by whom it is asked and what their rights in the property are; what transactions are charged as wrong, and how the claimants were injured thereby, and whether there is not any other way of redress for any wrong done to claimants. He will require specific charges and not merely general allegations of wrong.

The examination of the Receiver's accounts in the foreclosure suit is in progress before the referee, and will continue for some time yet.

Another suit has been begun, this time in Orange County, N. Y., by De Witt C. Langley, a bondholder. A number of allegations are made in the complaint similar to those presented in the other case. Besides these, special reference is had to the compromise by the company with Jay Gould. The plaintiff seeks the removal of Mr. Jewett, the appointment of a special Receiver during the pendency of the action, and also that the $9,000,000 settlement with Gould shall be set aside, and the latter be required to put up cash instead of worthless securities. An injunction is also asked to restrain the Farmers' Loan & Trust Company from selling out the road under the foreclosure proceedings.

Grayville & Mattoon.—We have now for the first time definite information of this railroad, a large part of which was built in 1876 and the rest before last July, but which has not been worked until very recently. The road is now completed for 57¼ miles, which is 7¼ miles more than we have hitherto reported. Its southern terminus is not at Olney, on the Ohio & Mississippi Railroad, as heretofore stated, but at Parkersburg, Ill., 10 miles south of Olney, whence it extends north by west to a point two miles north of Prairie City, and within 16 miles of the proposed northern terminus at Mattoon. It crosses the Ohio & Mississippi at Olney and the Vandalia Line at Greenup. Our yearly reports gave 20 miles of this road completed in 1876 (Olney to Newton) and 30 in 1877. Actually 25 miles were constructed in 1876 and 32¼ in 1877. A daily train has been run over the road by the Receiver, Mr. J. D. Herkimer, since Dec. 20, from Parkersburg to Prairie City, 55 miles The stations and distances from Parkersburg northward are: Parkersburg, 0; Fairview, 4 miles; Olney, 10; Dundas, 17; West Liberty, 19; Boos, 26; Newton, 30; Hunt's, 35; Harrisburg, 38; Greenup, 50; Prairie City, 55. The original intention was to work the road in connection with the Decatur, Mattoon & Southern, which intention may be carried out when the 16 miles to Mattoon are completed, for which, the Receiver informs us, arrangements have been made, so that it is expected to have it done by the 1st of May next. This will complete a line 113 miles long from Decatur southward nearly parellel with, but generally 30 or 40 miles northeast of the Springfield-Shawneetown line of the Ohio & Mississippi. Grayville, the proposed southern terminus, is on the Wabash River, about half-way between Vincennes and Shawneetown, and some 30 miles south of the present southern terminus of the road at Parkersburg.

Hannibal & St. Joseph.—It is said that this company purposes making a new mortgage for $1,000,000, to be secured by the land notes and other assets of the Land Department. These assets are to be deposited with the Farmers' Loan & Trust Company as trustee, the bonds to be paid off as the receipts from the land notes warrant. The assets to be thus pledged are said to amount to about $2,500,000. The issue of bonds will be used to pay off the floating debt.

Indianapolis, Bloomington & Western.—The Receiver has completed arrangements to re-establish the through line formerly run between Indianapolis and Kansas City over this road, the Wabash and the Hannibal & St. Joseph.

It is said that arrangements are being made for a through line between Indianapolis and Chicago by this road and the Chicago & Eastern Illinois. The line by way of Covington is 209 miles long, and by way of Danville 217, against 195 miles by the Kaukakee Line.

Indianapolis, Cincinnati & Lafayette.—Receiver Ingall's report for January is as follows:

Balance, Jan. 1		$625.87
Receipts from all sources		174,047.18
Total		$174,673.05
Disbursements		166,674.74
Balance, Feb. 1		$7,998.31

The receipts include $35,000 from loans, and the disbursements $59,644 for repayment of former loans.

The track is reported all laid on the Lawrenceburg cut-off, but there is still some work to do in ballasting and finishing up. Freight trains will soon begin to use the new track, but the express trains will not run over it for a month or two yet, in order that the road-bed may be fully settled and in order. The cut-off is about nine miles long, from near Guilford, Ind., east to North Bend, O., and has been under construction for some time. It avoids the detour by way of Lawrenceburg made by the old line, which is 18 miles long between Guilford and North Bend. There are some heavy cuts and fills on the new line, which is said to be very substantially built.

Indianapolis, Delphi & Chicago.—This narrow-gauge line is now completed from Rensselaer, Ind., east by south 17 miles to Bradford, on the Louisville, New Albany & Chicago, and was formally opened for traffic last week. The contractors, Yeomans, Hegler & Co., were allowed some time yet to complete this section, but hastened the work on it as much as possible, having laid all the track in a little over a month. They will proceed at once with another section of the road, hoping to have the line finished to Indianapolis this year.

Junction & Breakwater.—Bids were received last week for the grading of the branch from Lewes, Del., to Rehoboth Beach. The distance is six miles and ten bids were received. The contract will probably be awarded this week. The work will be light.

Kansas Pacific.—A dispatch dated Feb. 14 says that the United States Circuit Court will render no decision in the suit brought by this company to compel the Union Pacific to pro-rate on through business, because the Kansas Pacific has dismissed or withdrawn the suit.

Massachusetts Central.—There is some stir among the towns on the line of this road as to future action of the company and a good deal of sharp criticism on the present management. It is reported that an advantageous offer from parties connected with the Boston, Hoosac Tunnel & Western to complete the road was rejected, because if it had been accepted the present managers would have had to lose control of the property, which they were not willing to do, even though they had little hope of being able to finish it. Nearly all the towns on the line subscribed to the stock and paid in a considerable amount, and they naturally wish to have something for their money.

Michigan Midland & Canada.—It is stated that this road will hereafter be worked directly by the Canada Southern, which controls it. It is 15 miles long, from St. Clair, Mich., west to Ridgway, and has lately been worked by B. W. Gossage under a temporary lease. Its business is very small.

Midland, of Canada.—The employes of this railroad struck on Feb. 18, leaving work by general consent on account of the failure of the company to pay their wages.

Milton & Sutherlin.—The last rail on this road has been laid, and it will soon be opened for traffic. The road, which is of 3 ft. gauge, extends from Sutherlin, Va., on the Richmond & Danville road, southwest to Milton, N. C., a distance of nine miles. It is expected to accommodate a considerable local traffic, and has been built chiefly with local capital.

Missouri, Kansas & Texas.—The following statement of work done in his departmennt has been compiled by Mr. T. W. Teasdale, Assistant General Passenger Agent: "During the year 1877 there were distributed by mail, from their general offices in Sedalia and St. Louis, and by their eight regular traveling passenger agents, 769,000 pieces of advertising matter, all descriptive of Kansas and Texas, and the great Missouri, Kansas & Texas. The number of passengers carried in 1875 was 175,685; in 1876, 210,824, and in 1877, 225,722, an excess of 14,898 over the previous year. During last year this road handled 86,326 pieces of baggage, divided as follows: Local, 57,879; through north, 8,551; through to Texas, 19,886. In 1876 the road handled 76,463, showing an increase of 9,963 for 1877."

New York & Oswego Midland.—It is reported that certain parties are trying to get up a combination among the holders of Receivers' certificates to buy in the road when it is again offered for sale, or at any rate to bid for it, with a view of securing a sufficient price to pay off the certificates with interest.

Ohio & Mississippi.—Receiver King's report for January is as follows:

Cash on hand Jan. 1		$97,655.97
Receipts from all sources		369,978.10
Total		$467,634.07
Vouchers prior to Nov. 18, 1876	$1,972.58	
Vouchers and pay-rolls subsequent to Nov. 18, 1876	265,892.88	
		267,865.46
Balance, Feb. 1, 1878		$199,768.61

The receipts were $102,112.64 in excess of the disbursements for the month.

Philadelphia & Reading.—Reports are current in Philadelphia that this company has had some difficulty in meeting its payments, and that a temporary loan of $1,000,000 was recently negotiated in London.

Pittsburgh, Castle Shannon & Washington.—The track on this road is now laid to Finleyville, Pa., twelve miles south of Castle Shannon, and four miles beyond the point which it had reached at the close of 1877. The road will be formally opened in a few days, when trains will begin to run regularly between Pittsburgh and Finleyville.

Port Royal.—The Georgia Railroad Company has filed a bill in equity to restrain the suits brought against it by individual bondholders on its guarantee of some of the Port Royal Company's bonds. Several of the suits are in progress and a number more are threatened. Judgment has been obtained in one of them.

Searcy.—The contractors for this road have ordered the rails and fastenings from the St. Louis Bolt & Iron Company, and will lay the iron as soon as received. The road is to run from Searcy, Ark., east to the St. Louis, Iron Mountain & Southern at Kensett, about seven miles, and will replace a wooden tramway.

Selma, Marion & Memphis.—In a suit brought to enforce the payment of the unpaid balance of $300,000 on the subscription of $500,000 voted by the city of Memphis, Tenn., in aid of this road, the United States Circuit Court has decided that the company cannot require payment, it having violated the conditions of the subscription by expending a part of the money paid outside the State of Tennessee.

South Carolina Railroad Legislation.—A bill to regulate freight charges has passed one house of the South Carolina Legislature. It provides that no charge for local freight on any railroad in the State shall be greater than the rate charged for carrying the same class of freight a longer distance over the same road. It is provided, however, that rates received on freight carried through for connecting lines outside of the State shall not be considered for the purposes of the law in determining the reasonableness of rates.

Springfield, Athol & Northwestern.—This company has asked the Massachusetts Legislature for the necessary legislation to enable its bondholders to organize as a corporation under the same name whenever the trustees under the mortgages shall foreclose them and sell the road; also for authority to buy the road should it be sold, and to convert their bonds into stock of the new corporation when formed.

Standard Oil Company.—An important suit has been begun in the Circuit Court at Butler, Pa., where H. L. Butler, J. Latterfield and John Pitcairn have begun suit to recover $2,500,000 damages for alleged violation of a partnership contract made with the company in 1874, the complainants being then large owners of oil lands and producers of oil. They ask for an accounting and for the appointment of a Receiver for the Standard Oil Company.

Latest dispatches report the hearing still in progress, with a probability that a Receiver would be appointed, indications pointing to Mr. Thomas McFarland as the man.

Tampa, Pease Creek & St. Johns River.—A company by this name has been organized to build a railroad from Tampa Bay, on the Gulf coast of Florida, east by north across the State to a point on the St. Johns River, a distance of about 100 miles.

United New Jersey.—The report of the State Director for 1877 gives the following figures, which are published in advance of the full report:

Passenger earnings	$3,684,393.56
Freight	3,868,582.82
Express, mail, etc.	511,151.20
Total	$8,064,127.58
Working expenses (71.31 per cent.)	5,750,094.48
Net earnings	$2,314,033.10

As compared with 1876 there is a decrease of $2,877,453, or 26.3 per cent., in gross, and of $2,400,738, or 50.9 per cent., in net earnings. The earnings of 1876, however, were larger than ever before, swelled by the Centennial traffic. The earnings of the Delaware & Raritan Canal were:

Gross earnings	$896,569.65
Expenses (53.24 per cent.)	477,606.78
Net earnings	$418,962.87

The results of the year were as follows:

Net railroad earnings	$2,314,033.10
Net canal earnings	418,962.87
Interest on investments	221,525.39
Total	$2,954,521.36
Interest and taxes paid	2,368,589.40
Net surplus for dividends	$585,931.96
Rental dividends, 10 per cent	2,019,040.00
Total loss	$1,433,108.04

In 1876 the lessee received a profit of $1,127,421.70; in 1875 there was a deficit of $647,665.69. The capital stock is reported to be $20,190,400, an increase of $300,000 during the year; the funded debt at $19,899,116, a decrease of $183,204. One loan of $450,000 falls due in 1878, but is provided for by the sinking fund.

West River Valley.—The town of Brattleboro, Vt., has reversed its former action and voted to transfer to this projected road the $50,000 formerly subscribed to the Brattleboro & White Hall project. The town of Londonderry has also voted to subscribe $25,000 to the road.

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Delaware, Lackawanna & Western.

The following brief statement is made by this company for the operations of its 195 miles of road owned and 463 miles leased or controlled and worked, for the year 1877:

The capital account at the close of the last two years was as follows:

	1877.	1876.	Inc. or Dec.	
Stock	$26,200,000	$26,200,000	....	.....
Bonds	3,015,100	2,820,100	Inc.	$195,000
Net floating debt	1,693,170	880,315	Inc.	812,855
Surplus	4,305,415	5,213,437	Dec.	908,022
Total	$35,213,685	$35,113,852	Inc.	$99,833
Construction	28,817,018	29,520,365	Dec.	703,347
Materials on hand	983,402	1,209,650	Dec.	226,248
Stocks and bonds, market value	4,608,400	4,383,837	Inc.	224,563
Changing gauge	804,865	.....	Inc.	804,865
Total	$35,213,685	$35,113,852	Inc.	$99,833

The gross floating debt is $4,681,000, against which the company has in cash, bills and accounts receivable $2,988,000. The company also holds stocks and bonds of leased lines having a face value of $5,597,000, and a market value of $4,608,400. The funded debt was increased during the year by the sale of $195,000 of the newly authorized issue of $10,000,000 consolidated bonds. Of this issue $2,820,100 are held to redeem the old bonds, leaving $6,984,900 unissued.

The results of the year, as compared with the company's statement for 1876 are as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Net transportation earnings.	$4,401,858.39	.....	.....	....
Losses on coal	1,922,660.99	.....	.....	....
Balance	$2,479,197.40	$4,001,861.46	Dec.	$1,522,664.06	38.0
Interest on bonds	201,957.00	.....	.....	....
Rentals of leased lines	3,185,262.34	.....	.....	....
Total charges	$3,387,219.34	$3,280,036.50	Inc.	$107,182.84	3.3
Deficit or surplus.	Def. $908,021.94	Sur. $721,824.96	.....	....

The year's business therefore resulted in a loss equivalent to an assessment of 3.46 per cent. upon the stock, against a surplus in the previous year equal to 2.76 per cent., the result for the two years being a loss of $186,196.98, which is equal to 0.71 per cent. on the stock. The loss for the year reduces the company's surplus to $4,305,415.84.

The coal handled during the year was as follows:

	Tons.
Mined from company's lands	1,184,433
Purchased by company from others	856,233
Transported for other parties	329,213
Total	2,369,879

A decrease from the previous year of 30,225 tons, or 1.26 per cent. The losses on coal resulted from small production, low prices and the strike, which lasted from July 25 to Oct. 16.

Under the terms of the company's leases of coal lands, it has, down to Dec. 31, 1877, paid for 3,255,624 tons of coal not yet mined. The company owns 15,000 acres of coal lands, and holds 4,000 acres more under lease.

Memphis & Charleston.

This company owns a line from Memphis, Tenn., eastward to Stevenson, Ala., 272 miles; a branch from Moscow, Tenn., to Somerville, 14 miles; a branch from Tuscumbia, Ala., to Florence, 5 miles, and a branch from the depot in Memphis to the Mississippi River, 1 mile, making 292 miles in all. Its trains use the track of the Nashville, Chattanooga & St. Louis road from Stevenson, Ala., to Chattanooga, Tenn., 38 miles. The latest report is for the year ending June 30, 1877. Since the close of the year the road has been leased to the East Tennessee, Virginia & Georgia Company.

The equipment consists of 43 engines, of which 6 are reported condemned; 4 sleeping, 12 first-class passenger, 14 second-class passenger, 4 postal and 3 baggage and mail cars; 24 stock, 434 box, 94 platform and 65 coal cars; 1 pay-car. There are 126 freight cars reported as in bad order or condemned.

The balance sheet at the close of the year was as follows:

Stock ($18,194 per mile)		$5,312,725.00
Bonds ($17,582 per mile)		5,133,913.18
Coupons		225,738.09
Unclaimed interest, etc		20,738.96
Discount on Tennessee bonds		27,933.77
Earnings, interest, etc		971,682.53
Sundry accounts and balances		184,323.57
Total ($40,675 per mile)		$11,877,055.10
Construction and equipment ($29,592 per mile)	$8,640,954.00	
Branches and extensions	1,176,453.60	
Stocks	109,745 14	
Discount	93,245.88	
Interest and expenses	985,712.50	
Assets, materials, fuel, cash, bonds, balances due	336,908.42	
Profit and loss	534,035.56	
		$11,877,055.10

Since the close of the year, however, transactions have occurred by which this account has been materially changed. The company was then in such condition that immediate relief was necessary to prevent its bankruptcy and the stockholders were unable to give the necessary help. In this contingency it was resolved, at a special meeting of the stockholders, to accept the offer of the East Tennessee, Virginia & Georgia Company to lease the road. The report continues as follows: "The credit of your company was thereby so improved as to induce Messrs. A. Iselin & Co., of New York, to buy from the State of Tennessee the debt and lien which it held against your company, which has been assigned to the Farmers' Loan & Trust Company, under the provisions of a tripartite agreement between Messrs. A. Iselin & Co., the Farmers' Loan & Trust Company and the Memphis & Charleston Railroad Company, bearing date Aug. 21, 1877, to be held in force by said Trust Company for the benefit of certain consolidated bonds, Nos. 1 to 1,400, inclusive, which were given to the said Messrs. A. Iselin & Co. as additional security for the State debt, and in consideration of this delivery of bonds as additional collateral, the said Messrs. A. Iselin & Co. stipulated that, upon the payment by the Memphis & Charleston Railroad Company of the interest and principal of the said $1,400,000 of consolidated bonds, the trustee is authorized, and it is made his duty to cancel the assigned State debt and lien, without further consideration or payment by the Memphis & Charleston Railroad Company; and the said A. Iselin & Co. further stipulated to sell, and did sell, and have delivered to the Memphis & Charleston Railroad Company $700,000 of its outstanding 7 per cent. consolidated bonds for the sum of $148,275 in cash. This financial operation, together with profits heretofore realized by the payment of interest to the State of Tennessee in Tennessee coupons in connection with it, and together with profits resulting from the purchase and payment by the company of $142,000 of Tennessee bonds which it had borrowed, resulted in a profit to the Memphis & Charleston Railroad Company of $1,033,921 in principal and in an annual reduction of the interest charge of $51,277.

"In addition to the reduction of our indebtedness, just stated, the proceeds of $320,000 six per cent. bonds of the Nashville, Chattanooga & St. Louis Railway, which were received in payment for the sale of the McMinnville & Manchester and Winchester & Alabama Railroads will further reduce it, so that your aggregate indebtedness of all classes, over available assets, will stand at $4,264,883 as of the first of July last, instead of $5,471,250, as it appears from an analysis of the general balance sheet of the 30th June last, and the annual interest charge is reduced from $367,224 to $298,542 per annum, without considering the premium on gold in either case, which makes but a very small difference.

"Of the Nashville, Chattanooga & St. Louis Railway bonds received for the roads sold, all but $110,000 have been disposed of, and it is hoped those remaining on hand can be marketed shortly. * * * *

"Under the plan for the refunding of the company's indebtedness, a new series of consolidated 7 per cent. gold bonds, dated Aug. 20, 1877, and maturing Jan. 1, 1915, has been prepared, and a new deed of trust executed to the Farmers' Loan & Trust Company, of the City of New York, to secure the payment of the same. The aggregate amount of issue provided for is $4,700,000, of which $1,400,000 have been used, as previously stated, in connection with the assigned Tennessee debt, and $2,436,000 set apart to provide for the redemption of the first and second mortgage bonds now outstanding, under proper limitations for securing their faithful application. This leaves $864,000 with which to redeem the remnant of outstanding old consolidated and income bonds and past-due coupons on the same, which will suffice for that purpose and leave a surplus of $307,000 unappropriated."

Under this arrangement the company's liabilities are now as follows:

Floating debt		$336,959
Less available assets		286,569
Balance		$50,390
Bonded debt, after funding past-due coupons and bonds		4,217,000
Total		$4,267,390

The lease of the road provides that the lessee shall pay all operating expenses and interest on the bonds, and shall pay over the balance, if any, on Oct. 1 of each year. In case of any deficiency, the lessee will make the necessary advances and charge 6 per cent. interest thereon. The lease is terminable either by default on the part of the lessee, or by six months' notice from either party, but in case the Memphis & Charleston Company should give such notice, it must pay up all advances and interest due.

The earnings of the road for the year were as follows:

	1876-77.	1875-76.	Decrease.	P. c.
Passengers	$392,734.69	$420,090.52	$27,355.83	6.5
Freight	491,565.01	514,160.42	22,595.41	4.4
Express and mail	42,880.19	60,551.24	17,671.05	29.2
Rents and miscel'n's.	34,170.59	38,564.73	4,394.14	11.4
Total	$961,350.48	$1,033,366.91	$72,016.43	7.0
Expenses	643,827.50	712,136.49	68,308.99	9.6
Net earnings	$317,522.98	$321,230.42	$3,707.44	1.2
Gross earn. per mile.	3,292.30	3,538.93	246.63	7.0
Net " " .	1,087.40	1,100.10	12.70	1.2
Per cent. of expenses	66.97	68.91	1.94	2.8

The sums paid as tolls for the use of the Nashville, Chattanooga & St. Louis track, and for delivering local cotton ($72,346.58 in 1876-77, and $76,448.45 in 1875-76) are not included in earnings or expenses of either year.

The train mileage, etc., for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Train mileage, passenger	499,280	520,419	Dec.... 21,139	4.1
" " freight	305,606	318,588	Dec.... 12,982	4.1
" " service	33,385	58,299	Dec.... 24,914	42.7
" " switching	21,960	21,165	Inc.... 795	3.7
Total	860,231	918,471	Dec.... 58,249	6.3
Earn. per pass. train, mile	87.24 cts.	92.35 cts.	Dec.. 5.11 cts.	5.5
Earn. per freight train, mile	160.80 "	161.00 "	Dec.. 0.20 "	0.1
Earn. per mile, all trains	115.00 "	118.50 "	Dec.. 3.50 "	3.0
Expenses per mile, all trains	79.98 "	84.87 "	Dec.. 4.89 "	5.8
Net per mile, all trains	35.02 "	33.63 "	Inc... 1.39 "	4.1
Bales cotton carried	200,281	202,396	Dec.. 2.115	1.0
Total tons freight carried	138,812	145,229	Dec.. 6.417	4.4

The locomotive service cost last year, 18 cents per mile run. Through freight was 51.2 per cent. of the whole tonnage last year.

During the year 25 miles of iron rails, one mile of steel rails and 74,534 new ties were laid. A considerable amount will be needed for several years for new rails and for repairs of equipment, in order to make up for the enforced neglect of previous years. Interest was paid on all the debt except the consolidated bonds. Copies of the lease of the road, of the consolidated mortgage and of the agreement with Iselin & Co. are appended to the report.

Mobile & Ohio.

This company owns a main line from Mobile, Ala., to Columbus, Ky., 472 miles, with branches from Muldon to Aberdeen, Miss., 9 miles; from Artesia to Columbus, Miss., 14 miles; from Artesia to Starkville, Miss., 11 miles, and from Narkeeta Miss., to Gainesville, Ala., 21 miles, making 527 miles in all, with 46.5 miles of sidings. The road is in the possession of trustees pending suits for foreclosure, and their latest report is for the year ending Aug. 31, 1877.

The equipment consists of 80 locomotives; 20 passenger, 2 special and 18 baggage and express cars; 615 box, 35 stock and 274 flat cars; 97 construction cars. There are also 6 Pullman cars running on the road.

The general account is as follows:

Stock ($10,096 per mile)		$5,320,600.00
Bonds ($22,840 per mile)		12,038,677.05
Interest matured and unpaid		3,137,940.63
Floating debt		672,827.28
Profit and loss		475,275.32
Total ($41,069 per mile)		$21,643,320.28
Road and equipment ($34,364 per mile)	$18,126,865.37	
Lands and buildings	1,753,532.80	
Company's securities held	1,066,742.83	
Other assets and balances due	555,228.08	
Cash	140,951.20	
		$21,643,320.28

The bonds include $9,554,920 first-mortgage, $1,451,207.05 second mortgage, $977,550 convertible bonds and $53,000 secured upon the Gainesville Branch. Of the floating debt reported $134,222.48 is due by the trustees and $538,604.80 by the company.

The company has a land grant, of which 1,181,953 acres, besides town lots, were unsold at the end of the year. Sales for the year were 5,280 acres. The Land Department reports receipts from sales, rents and notes of $23,286.77; expenses were $12,500.16, and $11,970 was spent in buying first-mortgage sterling bonds. The cash on hand at the beginning of the year ($4,903.99) had been reduced to $3,720.60 at its close.

The earnings of the road for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Freight	$1,614,240.14	$1,493,421.44	Inc..$120,818.70	8.1
Passengers	348,645.37	356,496.63	Dec.. 7,851.26	2.2
Mails and express	95,586.40	102,734.54	Dec.. 7,148.14	7.0
Miscellaneous	24,801.85	28,916.72	Dec.. 4,114.87	14.2
Total	$2,083,273.76	$1,981,569.33	Inc..$101,704.43	5.1
Expenses	1,577,788.66	1,544,960.75	Inc... 32,827.91	2.1
Net earnings	$505,485.10	$436,608.58	Inc... $68,876.52	15.8
Gross earn. per mile	3,953.08	3,760.09	Inc... 192.99	5.1
Net earn. per mile	959.17	828.48	Inc... 130.69	15.8
Per cent. of expenses	75.80	77.80	Dec.. 2.00	2.6

The earnings of the 55 miles of branch lines (included above) were as follows:

	Starkville Branch.	Gainesville Branch.	Columbus Branch.	Aberbeen Branch.
Gross earnings	$7,795.36	$11,173.63	$31,484.00	$16,004.80
Expenses	8,929.45	19,462.87	20,808.24	13,801.21
Net earn. or loss	$1,134.09	$8,289.24	$10,675.76	$2,203.59

The net result on all these branches was a profit of $3,456.02, against a loss of $10,197.74 the preceding year.

The Trustees' account for the year was as follows:

Treasurer's cash, Aug. 31, 1876		$109,529.31
Gross earnings		2,083,273.76
Land Department, interest, etc		38,920.10
Total		$2,231,723.17
Ordinary expenses	$1,577,788.66	
Extraordinary expenses	316,000.00	
Bonds redeemed	45,400.00	
Real estate	1,964.10	
Materials, accounts receivable, etc	98,336.68	
Trustees' liabilities	51,282.53	
		2,090,771.97
Treasurer's cash, Aug. 31, 1877		$140,951.20

The extraordinary expenses were for repairs, renewals and betterments of road and equipment, which have been made necessary by the neglect of former years, which left the road in extremely poor condition. The road-bed has been now brought up to fair condition, and the equipment in as good a state as it can be without complete renewal. Last year 96 new freight cars were built besides all the repairs done. There were laid in the track 3,849 tons steel and 2,824 tons iron rails and 342,476 new ties; a steam shovel and material trains were kept at work a large part of the year. Nearly all the depots on the line have been rebuilt and the shops are now in very good condition.

The work done for the year was as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Train mileage, passenger	394,260	403,182	Dec.. 8,922	2.2
Train mil'ge, freight	679,316	642,839	Inc.. 36,447	5.7
" " service	308,301	204,468	Inc.. 103,833	50.8
Total	1,381,877	1,250,489	Inc.. 131,388	10.5
Passengers carried	211,139	199,352	Inc.. 11,787	5.9
Passenger mileage	9,004,770	9,044,895	Dec.. 40,125	0.4
Tons freight carried	251,428	223,107	Inc.. 28,321	12.2
Tonnage mileage	61,388,247	52,319,057	Inc..9,069,190	17.3
Av. pass. mileage load, No.	22.84	22.43	Inc.. 0.41	1.8
Av. freight tra'n load, No.	90.37	81.39	Inc.. 8.98	11.0
Av. receipt per pass. per mile	3.900 cts.	3.900 cts.	....	....
Av. receipt per ton per mile	2.629 "	2.854 "	Dec.. 0.225 cts.	7.9

Of the total freight movement 71.4 per cent. was of south-bound, and 28.6 per cent. of north-bound freight, this disparity much decreasing the average train-load of freight. The rates were lowest on north-bound business, being 2.278 cents per ton per mile, against 2.773 on south-bound. Much of the freight traveled long distances, the average haul being last year 210 miles on north-bound and 261.2 miles on south-bound freight. The total cotton carried last year was 236,203 bales, an increase of 20,332 bales, or 9.9 per cent. over the previous year.

The business of the year showed a considerable improvement, which was due partly to the improvement in the country along the line, and partly to the better condition of the road, enabling it to secure a larger share of through business and on better terms.

Chicago, Burlington & Quincy.

The summary here given is from advance sheets of the report of the President, Mr. Robert Harris, for the year 1877, the rest of the report not being in print as yet.

The total mileage owned or leased and worked is 1,620¼ miles, including for the year the 276¾ miles of the St. Louis, Rock Island & Chicago, which did not appear in last year's report. The total increase in mileage over last year is 277½ miles, a connection 0.75 miles long having been built at Keithsburg. This statement does not include 21 miles from Alton Junction to East St. Louis, the use of which is leased.

The equipment consists of 336 engines, 197 passenger train cars, 7,883 freight cars, 41 service cars and 782 hand and rubble cars. Additions during the year were 1 engine, 1 inspection car and 921 freight cars.

The capital account is substantially as follows:

Stock ($17,864 per mile)	$27,644,916.51
Bonds ($19,848 per mile)	30,604,825.00
Total stock and bonds ($37,712 per mile)	$58,249,741.51

The total amount of capital stock was increased $46,500 by the conversion of Burlington & Missouri River bonds, and $174 by payments on old subscriptions; it includes $267,306.51 Burlington & Missouri River stock not yet exchanged. During the year $484,500 bonds were retired and $3,588,000 new bonds were issued, $1,088,000 being 7 per cent. bonds and $2,500,000 5 per cent. bonds issued for the purchase of the St. Louis, Rock Island & Chicago road. The net increase of funded debt was $3,103,500.

The report says: "The entire property of the company and its liabilities, Dec. 31, 1877, were:

Permanent investment, bills and accounts receivable, cash and materials on hand for future use		$66,476,406.28
Capital stock	$27,644,916.51	
Bonds	30,604,825.00	
Accounts and bills payable	1,036,051.86	
		59,285,793.37
Making net assets over liabilities, as before stated.		$7,190,612.91

"It has sometimes been suggested that this surplus fund ought, wholly or in part, to be written off against the depreciation of our equipment and other perishable property.

"We have thought it our duty to give accurate records of the cost of the whole property and statements of its net earnings, after carefully applying an adequate portion of them to fully keeping up its condition.

"If the managers were to alter the valuation of the equipment account as rolling stock rises and falls in price, the same rule should apply to other parts of the property, as fluctuations occur in the iron, the labor, the land, and the value of the purchased branches, which have entered into the cost of the whole. This would lead to confusion in comparing one year's result with another, and we think would not prove satisfactory in practice. The course pursued presents to the stockholders the facts and figures upon which to form their own conclusions."

The earnings and expenses (including rentals and taxes) for the two last years were as follows:

	1877. 1,620.4 miles.	1876. Av. 1,339 miles.	Inc. or Dec.	P. c.
Freight	$9,534,543.65	$8,821,225.16	Inc.$713,318.49	8.1
Passengers	2,483,400.43	2,653,888.54	Dec 170,488.11	6.4
Miscellaneous.	512,931.42	528,836.75	Dec. 15,905.33	3.0
Total	$12,530,875.50	$12,003,950.45	Inc.$526,925.05	4.4
Expenses	7,309,708.81	6,813,999.82	Inc. 495,708.99	7.3
Net earnings	$5,221,166.69	$5,189,950.63	Inc. $31,216.06	0.6
Gross earnings per mile	7,733.20	8,909.00	Dec. 1,235.80	13.8
Net earn. per mile	3,222.15	3,880.00	Dec. 657.85	17.0
P. cent. of exp.	58.33	56.76	Inc. 1.57	2.8

The only figures with regard to traffic given in this part of the report are as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Passengers carried	2,009,367	2,215,783	Dec.. 206,416	9.3
Tons freight carried	3,249,625	2,892,614	Inc.. 357,011	12.3

The number of local passengers on the St. Louis, Rock Island & Chicago was 172,500; tons of freight, 157,400. The statement includes for 1877, 218,612 tons of Illinois Central freight hauled in cars of that road, against 237,028 tons in 1876.

The financial statement for the year is as follows:

Gross earnings (including $20,579.04 interest and exchange)		$12,551,454.54
Expenses and taxes, not including rentals		7,178,313.94
Net earnings		$5,373,140.60
Interest on bonds and bills payable		2,139,911.37
Balance		$3,233,229.22
Dividends Nos. 33 and 34	$2,479,714.66	
Rents of tracks and depots	131,394.87	
Amounts transferred to sinking fund	241,103.71	
		2,852,213.23
Surplus for the year		$381,015.99
Balance of income account, Jan. 1, 1877	$3,991,383.49	
Less amount to Albia, Knoxville & Des Moines sinking fund, $21,315, and Chicago & Iowa stock charged off, $404,552.77	425,867.77	
		3,565,505.72
Balance at close of year		3,946,531.71

From this is to be deducted $1,080,672.55, suspended debts and investments of doubtful value. Adding to the balance the various sinking funds and credits to profit and loss there is a total surplus of $7,190,612.91, which is represented in the following condensed statement:

Amount of sinking funds	$3,797,737.36
Local aid used in construction in Iowa	381,508.85
Used in construction, for which no provision is made for funding	1,200,359.11
Used in construction, for which bonds can be sold	864,447.89
Supplies, materials, investments, etc	946,559.70
Total	$7,190,612.91

There were bought during the year under the traffic contracts $35,000 Kansas City & Cameron bonds, costing

$35,274.22, of which $19,000 were sold, leaving a balance of $16,274.22.

The traffic contract with the Chicago, Clinton & Dubuque, and the Chicago, Dubuque & Minnesota railroad companies has by mutual agreement been terminated.

On account of pending negotiations with the Chicago & Iowa bondholders, growing out of the foreclosure of the mortgage on that road, there has been no advertisement this year for the purchase of the bonds of the Chicago & Iowa Company. The road has been advertised for sale under foreclosure, and a basis has been reached between the committee of the bondholders and this company, contemplating a contract with the new company after reorganization, by which the business of that road is to be done over the Chicago, Burlington & Quincy road as heretofore.

Much need is felt of an additional supply of cars to meet the demands of business during the fall months. Last year the amount paid for car hire over that received was $150,-833.96.

During the year 25.75 miles of new second and side tracks were built.

The amount expended on the St. Louis, Rock Island & Chicago road for reconstruction of road and equipment was $580,465.34. The report says:

"By the construction of the road from the junction with the Chicago, Rock Island & Pacific road at Colona, three miles, to a junction with the Rock Island & Sterling Division at Barstow, we give up the use of 5½ miles of the Chicago, Rock Island & Pacific road, saving the rent, and obtain a direct connection for business with the North by way of Clinton, as also for business with Chicago by way of the Mendota & Clinton Branch.

"The whole amount expended for the purchase and improvement of the St. Louis, Rock Island & Chicago road and equipment, including discount on Chicago, Burlington & Quincy 5s ($308,584.25), has been $2,894,036.11, being $394,036.11 in excess of the Chicago, Burlington & Quincy 5 per cent. bonds issued for this road.

"The advantages of the St. Louis, Rock Island & Chicago road have quite fully met our expectations. Besides being a feeder to our main line in Illinois, it forms a link in the route between the upper Mississippi valley and St. Louis by the way of the roads extending from Clinton northward, and by the way of the Burlington, Cedar Rapids & Northern, and, with our Iowa road, makes a line between Council Bluffs and St. Louis, thus enabling this company to participate in the business between St Louis and the South, and Iowa, Nebraska, and the other Western States and Territories."

Other expenditures for new construction were $195,916.37 in Illinois, $172,504.21 in Iowa, and $459,743.80 for new equipment, making, with the amount spent on the Rock Island road, $1,408,629.72, against $655,660.17 of which new bonds can be sold.

There are now 574.85 miles of steel track in the road; 171.05 miles of the main line are still laid with iron. The whole cost of steel rails used in relaying the main line has been charged to expenses.

During the year 13,748.69 acres of land were sold for $170,964.69; sales of 10,182.91 acres were canceled, leaving 41,230.32 acres unsold at the close of the year. The gross receipts of the Land Department were $308,491.83; expenses, $18,903.36, leaving a balance of $289,588.47, of which $281,497.86 was paid to the trustees under the land grant mortgage. The estimated net results of the land grant to the end of the year, including assets on hand, amounted to $4,917,710.72, to meet $5,058,350 bonds issued under the land grant mortgage.

The report says, in conclusion: "Our main line in Illinois is now in very good order, having, by steel rails and otherwise, been permanently improved from year to year.

"Our equipments have been thoroughly kept up, with some important additions, detailed in the schedule of rolling stock, but the amount still paid out for cars hired indicates that we have not provided the amount which sound economy requires at a time when rolling stock can be laid in at very low terms. We have accordingly made arrangements for a further increase, which can be paid for by selling bonds provided under the mortgage for such purposes.

"Other calls for construction promise to be very small, except for our Iowa line, and for completing the arrangements upon our lately-purchased St. Louis, Rock Island & Chicago road, which is coming more and more into use as a northern and southern line to St. Louis. For these last-named outlays we must still rely upon our past or future surplus earnings.

"We have during the past year earned beyond our dividends of 9 per cent., $622,119.70, of which the sinking fund has absorbed $241,103.71, and the balance, $381,015.99, has practically gone toward paying for the necessary outlays of $172,557.34 on the Iowa, and $394,036.11 on the St. Louis, Rock Island & Chicago road. With similar (although we estimate smaller) demands upon our future earnings, and in view of the unsettled condition of financial affairs throughout the country, we think a conservative policy in regard to dividends is judicious; and that whatever we may earn, we ought not to divide during the coming year more than 8 per cent.

"Our very moderate success during the past year under the oppressive operation of the Iowa laws has been due to good crops and such economy in expenses as we could judiciously practice.

"In the future, starting with a track largely improved by steel rails, and with increased rolling stock, we can still only rely for similar success upon close attention to economy.

"We find some compensation for the disadvantages under which we have labored in the freedom from injurious competition from new roads, which might have threatened us had legislators been more just and less short-sighted; but we welcome the improved tone of public opinion at the West in regard to the rights of railroad companies, as an indication of the growth of broader views in regard to interests which are intrinsically in harmony with those of the public."

Illinois Central.

This company owns and works the following lines:

	Main line.	Second track.	Sidings.
Chicago Division, Chicago to Cairo	364.73	17.53	78.41
Northern Division, Centralia to Dubuque	340.77	.....	45.14
Total owned	705.50	17.53	123.55
Dubuque & Sioux City R. R., leased	142.89	....*	16.58
Iowa Falls & Sioux City R. R., leased	183.69	.....	11.42
Cedar Falls & Minnesota R. R., leased.	75.58	.....	3.51
Total leased	402.16	.....	31.51
Total worked	1,107.66	17.53	155.06

At the close of the year 374.96 miles of this track were laid with steel, being 370.02 miles in the main track and 4.94 miles in the Chicago and Centralia yards.

The equipment consists of 212 engines; 18 sleeping, 81 passenger, 8 smoking, 56 baggage, mail and express and 10 old passenger cars; 3,348 box and combination, 416 stock, 1,501 coal and platform and 4 powder cars; 1 pay, 2 officers' and 17 service cars. Three postal cars, built last year, are owned jointly with the Cincinnati, Lafayette & Chicago and the Indianapolis, Cincinnati & Lafayette. There are 350 of the company's cars in service on the Chicago, St. Louis & New Orleans road.

The general balance sheet is as follows:

Shares ($41,106 per mile)		$29,000,000.00
Funded debt ($14,894 per mile)		10,508,000.00
Balance for 1877		790,103.19
Surplus		1,816,933.18
Total ($59,695 per mile)		$42,115,036.37
Permanent expenditures in Illinois	$34,000,000.00	
Permanent expenditures in Iowa	860,773.19	
Working stock of supplies	411,662.61	
Chicago, St. Louis & New Orleans first mortgage bonds, Tennessee Division, cost	542,300.00	
New Orleans, Jackson & Northern coupon bonds, $500,000, less $300,000 borrowed on them	200,000.00	
Investments, New Orleans line	5,062,994.43	
Cash assets	596,145.86	
Miscellaneous assets	441,160.28	
		42,115,036.37

During the year the funded debt was diminished by the payment of $60,000 construction bonds and $94,000 sterling sinking fund bonds. Only $4,000 of the construction bonds are now outstanding. On the recommendation of the foreign delegates $2,816,675.40 was deducted from the surplus account, and a like amount was taken from permanent expenditures in Illinois, leaving the amount of that account $34,000,000.

The Land Department reports sales of 8,811.57 acres for $62,816.31, and town lots for $357.10. The gross cash receipts for the year were $127,104.31, and the expenses of the department $17,515.31. The trustees report $531,708.78 in bills receivable and contracts, and only $4,000 of the construction bonds to be redeemed. There are still 286,280 acres unsold, of which 204,309 acres are south of the Ohio & Mississippi Railway, and 77,822 acres between that road and Tolono and Decatur, leaving only 4,149 acres north of those towns.

The earnings of the entire road were as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Freight	$4,555,405.68	$4,748,355.10	Dec. $192,949.42	4.1
Passenger	1,440,974.05	1,624,711.62	Dec. 183,737.57	11.3
Mail	129,157.64	162,197.66	Dec. 33,040.02	20.4
Express	131,332.34	117,734.30	Inc 13,598.04	11.6
Sleeping cars	31,326.23	35,591.07	Dec. 4,264.84	12.0
Rent of property	68,987.07	94,231.73	Dec. 25,244.66	26.8
Rent of track	132,328.32	151,613.48	Dec. 19,285.13	12.7
Storage and dockage	4,339.49	13,716.38	Dec. 9,376.99	68.4
Switching	33,442.03	34,140.19	Dec. 698.16	2.1
Telegraph	1,037.94	1,886.52	Dec. 848.58	44.7
Train news agency	4,849.96	4,977.49	Dec. 127.53	25.5
Cairo Wharf Boat	4,440.17	3,887.42	Inc. 552.75	14.2
Inter-State transfer	52,577.86	13,832.64	Inc. 38,745.22	282.2
Mile'ge of cars and engines	93,123.26	83,813.82	Inc. 9,309.44	11.1
Total	$6,683,322.04	$7,090,689.49	Dec. $407,367.45	5.7
Working exp.	3,122,443.14	3,845,642.75	Dec. 723,199.61	18.8
Net earnings.	$3,560,878.90	$3,245,046.74	Inc. $315,832.16	9.7
Gross earn'gs per mile	6,033.73	6,401.27	Dec. 367.54	5.7
Exps. per mile	2,818.95	3,471.74	Dec. 652.79	18.8
Net. earnings per mile	3,214.78	2,929.53	Inc. 285.25	9.7
Per cent. of expenses	46.72	54.23	Dec. 7.51	13.8

The earnings of 1877 were divided as follows:

Earnings of road in Illinois	$4,522,291.20
Net earnings over C., B. & Q. R. R.	399,700.16
Net earnings over T., P. & W. R. R.	43,476.64
Cairo wharf boat and transfer	57,018.03
Earnings over other lines	104,219.59
Total earnings in Illinois	$5,126,705.62
Dubuque & Sioux City R. R.	921,412.06
Iowa Falls & Sioux City R. R.	441,934.94
Cedar Falls & Minnesota R. R.	149,792.78
Total	$6,639,845.40

This differs from the amount given above by $43,476.64, which is deducted as the expense of the business done over the Toledo, Peoria & Warsaw. The earnings per mile of the road in Illinois by this statement were $7,267; Dubuque & Sioux City, the eastern part of the Iowa Division, $6,448; Iowa Falls & Sioux City, the western part of the Iowa line, $2,406, and of the Cedar Falls & Minnesota Branch, $1,982 per mile.

The income account was as follows:

Net earnings, deducting $43,476.64, as above		$3,517,402.26
Charter tax paid State of Illinois	$316,351.94	
Tax paid State of Iowa	66,575.41	
Rent of leased lines	587,913.52	
		970,840.87
Net balance		$2,546,561.39
Add Land Office receipts		108,135.99
Total		$2,654,697.38
Interest on bonds, and premium	$582,990.49	
Dividends, two of 2 per cent. each	1,160,000.00	
Construction and new equipment	73,603.70	
Set apart to establish insurance fund	48,000.00	
		1,864,594.19
Balance to general account		$790,103.19

The permanent expenditures in Iowa were also increased by $82,212.66, the largest item being $51,898.12 for bridging.

The work done was as follows:

	1877.	1876.	Inc. or Dec.	P.c.
Train mileage, passenger	1,449,542	1,511,174	Dec. 61,632	4.1
Train mileage, freight	2,558,695	2,731,826	Dec. 173,131	6.3
Train mileage, service	37,510	99,467	Dec. 61,957	62.3
Train mileage, switching	765,111	825,555	Dec. 60,444	7.3
Total	4,810,858	5,168,022	Dec. 357,164	6.9
Pass. carried	1,711,398	1,815,788	Dec. 104,390	5.7
Pass. mileage	46,076,845	51,238,031	Dec. 5,161,186	10.1
Tons freight carried	1,803,044	1,899,627	Dec. 96,583	5.1
Tonnage-mileage, northbound	124,629,412	143,583,655	Dec. 18,954,243	13.2
Tonnage-mileage, southbound	124,716,529	121,018,659	Inc. 3,697,870	3.1
Total	249,345,941	264,602,314	Dec. 15,256,373	5.8

Some general averages of traffic are as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Av. receipt per freight train mile	$1.7803	$1.7382	Inc. $0.0421	2.4
Av. receipt per pass. train mile	1.1738	1.2872	Dec. 0.1134	8.8
Av. receipt per mile, all trains	1.3890	1.3720	Inc. 0.0170	1.2
Av. expense per mile	0.6490	0.7440	Dec. 0.0950	12.8
Av. net earn. per mile	0.7400	0.6280	Inc. 0.1120	17.8
Av. receipt per pass. per mile	3.11 cts.	3.17 cts.	Dec. 0.06 ct.	1.9
Av. rate per ton per mile	1.83 "	1.79 "	Inc. 0.04 "	2.2
Cost of engine service per mile	17.21 "	18.81 "	Dec. 1.60 "	8.5
Average No. of cars per train	11.38	11.17	Inc. 0.21	1.9
Av. pass. train load, No.	31.79	33.91	Dec. 2.12	6.3
Av. freight train load, tons	97.45	96.86	Inc. 0.59	0.6

The average rate per ton per mile was 1.76 cents on north and 1.89 cents on south-bound freight; 1.96 cents on local, and 1.27 cents on through freight. Traffic Manager Tucker says:

"It will be noticed that the rates obtained for the transportation of freight in 1877 show an increase of $\frac{1}{100}$ of one cent per ton per mile over those received in 1876. The tonnage moved one mile in 1877 was 15,256,373 tons less than in 1876. Of the tonnage moved in 1877, 84 per cent. was local, while of that of the year 1876, 87 per cent. was local. The earnings from local freight in 1877 were 86 per cent., as compared with 89 per cent. in 1876. The unsettled through rates to the seaboard, prevailing during the year, necessarily had an effect upon our local rates; more especially was this the case at junction points and adjacent stations. To some extent, the force of this circumstance was neutralized by maintaining as harmonious relations as possible with the lines crossing us. The full average wheat crop along the leased lines in Iowa in 1877 gave fair results as to traffic during the fall months. It is estimated that one-third of the wheat crop along these lines is yet to be moved, also the greater portion of a large corn and oat crop in Illinois and Iowa, which will probably await the opening of navigation before being moved to any considerable extent."

The Superintendent's report notes the usual repairs and renewals of track, bridges and buildings.

The directors' report antipates much improvement in the traffic for the current year, as a great part of the large crops of 1877 still remain to be moved. The earnings of last year, in spite of all drawhacks, were enough to pay 4 per cent. dividends on the stock and leave nearly enough for another. The dividend dates have been changed from February and August to March and September, to avoid possible error in estimating earnings.

In July last the company assumed temporary charge of the Gilman, Clinton & Springfield road, with the understanding that all the receipts for the rest of the year should be spent on the line. A new company, the Chicago & Springfield, has been organized, and from it the Illinois Central has taker a lease of the line. The consideration for its control, practically made permanent, is $1,600,000 Illinois Central 6 per cent. currency bonds, to be issued next month, secured by a mortgage on the 112 miles of road between Gilman and Springfield. The mortgage made by the Chicago & Springfield Company is for $2,000,000, admitting of the issue of $400,000 additional bonds as needed for improvements of the road.

Concerning the New Orleans line, the report says: "The final decree of the Court confirming the consolidated mortgage bondholders in possession of the New Orleans line, was entered in November last, and the final transfer by the Receiver to the purchasers was made on the 31st December. The transfer of the Tennessee Division necessitated payment in full of the debt to the State. Since 1st January the entire line, extending from New Orleans to the Ohio River, has been under the control of Mr. C. Clarke, our Vice-President. Mr. Clarke has made repairs to the plant, bridges and other structures, and has relaid nearly 200 miles of the track; 10,000 tons of steel rails will be laid the coming spring. It is proposed to extend the line 2½ miles up the Ohio River, to a point opposite the Illinois Central freight depot, by the 1st August next. The money derived from the traffic of the road has been used, under the orders of the Court, partly in paying local debts and partly in improvement of the property. This company has advanced, for like necessary purposes, about $1,000,000, against which it holds $1,138,000 of well-secured bonds of the Southern company, of lien prior to that of our previous investment, Our company will also hold nearly three-quarters of the capital stock of the new Southern consolidated company. The traffic, even during this transition period of 1877, has shown a decided gain, and our deliveries of freight at Cairo, destined to the South, increased nearly 50 per cent. beyond those of 1876. The subject of the investment in this New Orleans line was so thoroughly treated in the report of the foreign delegates, that your directors have simply to call attention to the vastly improved condition of New Orleans, and the State of Louisiana, under their present home government, with their commercial position so entirely changed by the accomplished fact of deep water through the jetties. New Orleans is now a first-class port for vessels of the largest draft, and will command its share of the exports of the United States to Europe. We expect to carry to that port a fair proportion of the exportable produce of the Mississippi valley.

"In Iowa the indications of public sentiment toward railways are more favorable. The effect of injudicious legislation on the interests of the State have been so severely felt by the people that there is a probability of repeal of the unwise and restrictive laws which crippled the railways of the State and forbade further investment of capital. The directors regret not being able to advise any result their efforts to reach a definite settlement with the owners of the Iowa line, whose demands have been greater than the board could justly meet.

"For many years we have had close relations with the Toledo, Peoria & Warsaw Railway, on which foreclosure proceedings are now in progress. The managers of that property evidently desire to consolidate it with the Wabash Railway. This is in conflict with our interests, and we are endeavoring to retain our share of the traffic passing through Gilman which should properly go to to Chicago.

"Finally, in regard to the competition of several years past between water communication from Chicago eastward and the trunk railways—which latter determined at one time to take the traffic from Illinois to the seaboard regardless of cost or profit—it is well settled that the inter-state railways have played a losing game. During eight months of water communication the facilities for taking freight by water are so much improved that the actual cost of water transportation to the seaboard is less than half the actual cost of rail transportation.

"It is admitted that the outlays made to increase the carrying capacity of the railways have been improvident; and since the reduction of the tolls upon the Erie Canal by the State of New York cheap water communication is so firmly established that the effort to take freight by *rail during the summer months has failed, as indicated by the reports of several of the leading railways.* During the contest freight was carried in large volume at about half the actual expense incurred. It can hardly be expected that the public will loan more money to renew this contest, which has so seriously disturbed the value of railway properties.

"Chicago is, and must continue to be, the great inland port. The tonnage of vessels going in and out of Chicago last year was 6,585,415 tons. With three millions of population in Illinois, and three or four millions in the States west and north of it, its location as the nearest outlet to surplus products of that large population establishes it permanently as second only to New York in its importance as a commercial centre."